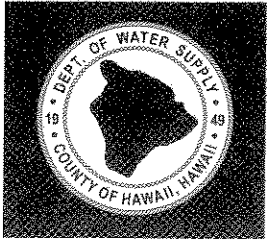


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**DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII**

345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAII 96720  
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

July 5, 2007

Ms. Genevieve Salmonson, Director  
Office of Environmental Quality Control  
235 South Beretania Street, Suite 702  
Honolulu, HI 96813

**DRAFT ENVIRONMENTAL ASSESSMENT FOR OCEAN VIEW  
DOMESTIC WATER WELL, RESERVOIR, TRANSMISSION  
AND STANDPIPE/SPIGOT FACILITIES**

**KA'U, ISLAND OF HAWAII**

**TAX MAP KEYS (3<sup>RD</sup>) 9-2-101:032 AND 037; 9-2-093:009, 010, AND 011;  
9-2-185:094, 095, AND 096; 9-2-197:001; VARIOUS PRIVATE  
ROADS AND PORTION OF STATE HIGHWAY 11**

RECEIVED  
JUL 11 2007  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

The Department of Water Supply, County of Hawaii, has reviewed the comments received during the 30 day comment period on the draft environmental assessment that ended on June 22, 2007. Our agency has determined that the project will not have significant environmental effects and has issued a Finding of No Significant Impact (FONSI). Please publish notice of availability for this project in the next available edition of the *Environmental Notice*. We have enclosed the following:

1. Four copies of the Final EA;
2. A completed OEQC Environmental Notice Publication Form;
3. A distribution list for the Final EA;
4. A hardcopy of the project summary; and
5. A sample "Dear Participant" letter.

An e-mail with the project description has been sent to your office by our consultant. If you have any questions, please contact Ms. Shari Komata of our Engineering Division at (808) 961-8070, extension 252.

Sincerely yours

Milton D. Pavao, P.E.  
Manager

SHK:sco

Encs.

copy – (w/o enc.) Mr. Ron Terry, PhD, Project Environmental Consultant  
(w/o enc.) Mr. Bill DeMent, SSFM International, Inc.

*... Water brings progress...*



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**OCEAN VIEW DOMESTIC WATER WELL, RESERVOIR,  
TRANSMISSION AND STANDPIPE/SPIGOT FACILITIES  
KA`U DISTRICT, ISLAND OF HAWAII  
STATE OF HAWAII**

**FINAL ENVIRONMENTAL ASSESSMENT**

Tax Map Key Numbers: (3rd): 9-2-101:32 & 37; 9-2-93:9, 10 & 11; 9-2-185: 94, 95, 96  
9-2-197:01; various private roads and portion of State Hwy. 11

**PROPOSING  
AGENCY:**

County of Hawai'i  
Department of Water Supply  
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Hilo HI 96720

**CONSULTANT:**

Geometrician Associates  
PO Box 396  
Hilo HI 96721

and

SSFM International Inc.  
101 Aupuni Street, Suite 315  
Hilo, HI 96720

**CLASS OF ACTION:**

Use of County Funds  
Use of State Land

This document is prepared pursuant to:  
the Hawai'i Environmental Protection Act,  
Chapter 343, Hawai'i Revised Statutes (HRS), and  
Title 11, Chapter 200, Hawai'i Department of Health Administrative Rules (HAR)

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## SUMMARY

In response to a decade-long community effort to provide a source of potable water for rapidly growing Ocean View, the Hawai'i County Department of Water Supply (DWS) proposes to drill an exploratory well on a one-acre property within Paradise Circle Makai in Ocean View. DWS will then perform a pump test and water quality analysis. If developable water of appropriate water quality is present, it will convert the exploratory well to production and build a 0.5 million gallon reservoir. If funding is sufficient, a backup well will also be built on the site. If potable water is not developable at this preferred site, an alternate site at Kohala Blvd. in Hawaiian Ocean View Ranchos will be considered. Transmission lines will conduct the water to a public standpipe/spigot fill site near Lehua Lane and State Highway 11. Licensed water-hauling trucks will utilize the standpipes, and small-quantity residential self-haulers will use the spigots. Both sites will be fenced and landscaped and hours will likely be restricted at the fill site in order to reduce impacts to neighboring properties. A branching transmission line will provide the opportunity for fire protection for the Ocean View Town Center and Pohue Plaza.

No significant biological, historical or cultural resources are present or would be affected. The Manuka Aquifer has very little current usage and the project would not affect the sustainable yield. Practices to minimize stormwater, dust and noise during construction and operation of the facilities will be implemented. DWS will monitor traffic at the fill site to determine whether offsite signage or road improvements will be necessary to mitigate for the increased traffic that the facility will involve.



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**LIST OF ABBREVIATIONS**

ALISH	Agricultural Lands of Importance to the State of Hawai`i
BMP	Best Management Practice
CDUP	Hawai`i State Conservation District Use Permit
DHHL	Department of Hawaiian Home Lands
DLNR	Hawai`i State Department of Land and Natural Resources
DWS	Hawai`i County Department of Water Supply
EA	Environmental Assessment
EIS	Environmental Impact Statement
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
gpm	Gallons per minute
HDOH	Hawai`i State Department of Health
HAR	Hawai`i Administrative Rules
HEPA	Hawai`i Environmental Policy Act
HCGP	Hawai`i County General Plan
HRS	Hawai`i Revised Statutes
MCL	Maximum Contaminant Level
mgd	Million gallons per day
mg/L	Milligrams per liter
OEQC	Hawai`i State Office of Environmental Quality Control
SFHA	Special Flood Hazard Area
SHPD/O	State Historic Preservation Division/Officer
SMA	Special Management Area
UH	University of Hawai`i
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USNRCS	U.S. Natural Resources Conservation Service



# 1 PROJECT PURPOSE AND NEED, LOCATION AND DESCRIPTION

## 1.1 Project Background and Purpose and Need

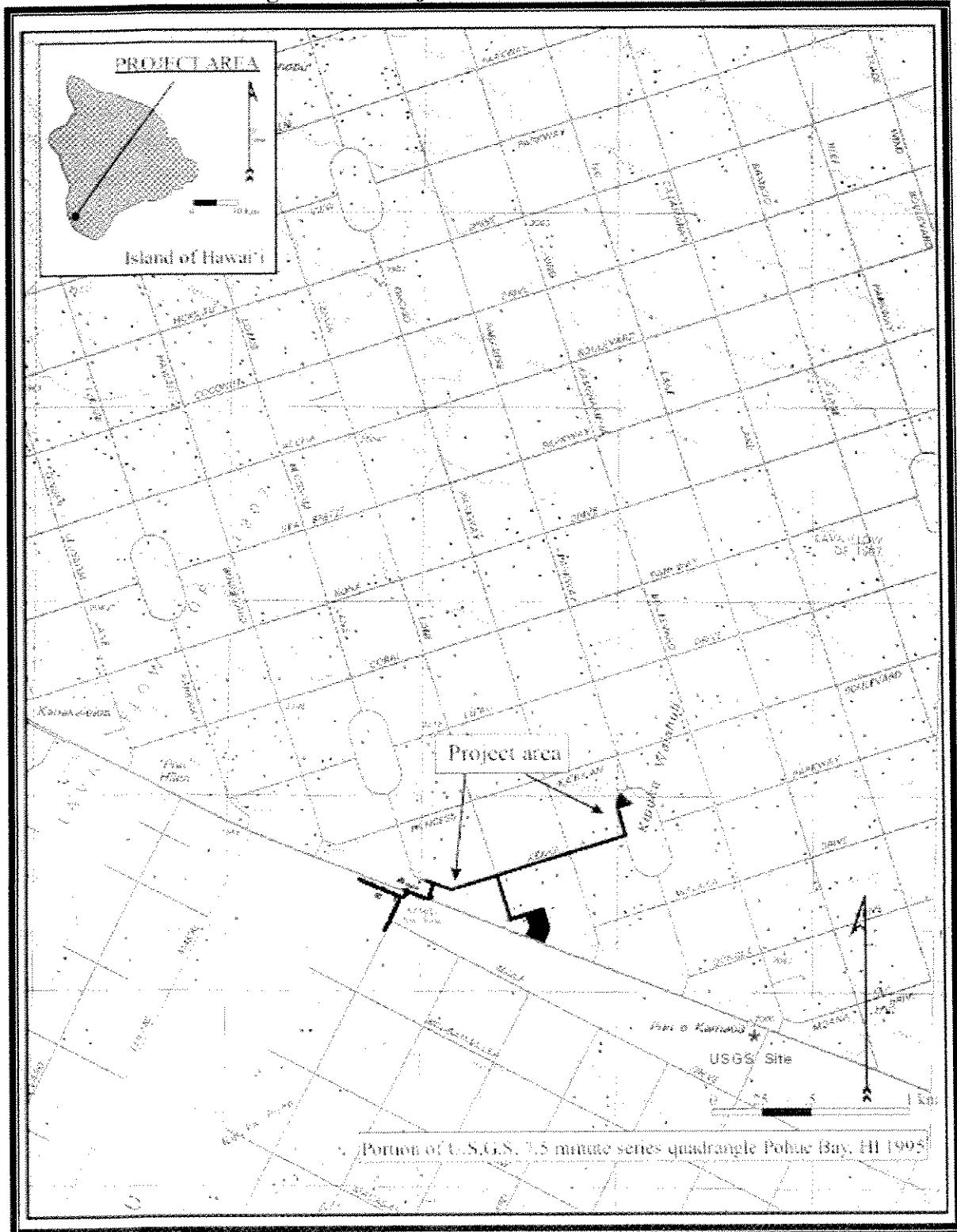
Ocean View is the name for a community of subdivisions laid out in the 1960s over roughly 20 square miles on the lava flows of the southern flank of Mauna Loa (Figure 1-1). With a current population of at least 3,000, the area lacks much basic public infrastructure, including public roads, schools and water systems. According to a 2004 water master plan conducted by Townscape Inc., on behalf of the County of Hawai`i, for a wider area also including a portion of South Kona:

“There are no County water systems from South Point to Ho`okena, a distance of approximately 40 miles.... Residents within this project area depend on rainwater catchment and trucked water for domestic and commercial purposes. This community experiences frequent droughts with rainfall as low as 20 inches per year that affect the viability of catchment systems. The area is extremely isolated and the closest water source is more than 20 miles away in either Wai`ohinu or Hookena. The distances to water resources and the high cost of hauled water are problematic for residents, business owners, and farmers. Public health is compromised by the absence of clean water. New schools or medical facilities are not developable in the region without dependable water supplies. These factors illustrate the need for a study of water resources and the planning of water infrastructure. The project area includes over 10,000 already subdivided lots in Ocean View. These affordable lots have the potential for significant growth. However, this region is not equipped with the infrastructure and public services needed to accommodate that growth” (Hawai`i County Office of the Mayor 2004: p. 1-2).

Over the last ten years local government and the community have undertaken several initiatives that respond to the need for water services in South Hawai`i. The Ocean View Community Association (OVCA), Tel Hawai`i, and the County of Hawai`i (through the Big Island Resource Conservation and Development Council) funded preparation of *A Water Development Plan – Phase I*, completed by Waimea Water Services Inc. The plan called for forming an organization to secure funding and guide construction of a well estimated to cost almost \$4 million at the Ocean View Community Center. As a result, a number of local community, road and business associations banded together and formed the Ocean View Community Development Corporation (OVCDC) to accomplish this. In 1998, the Hawai`i State Legislature appropriated \$1.35 million for planning, design, and construction of a well at Ocean View (Act 116, 49A/B). This bill was passed with the support of the OVCDC and State legislators. However, funding for the allocation was not released and the appropriation lapsed in 2000.

Subsequently, the OVCDC met with the County administration to continue efforts to develop a water system for the area and explored formation of a Community Facilities District (CFD) for funding purposes. For various reasons, this effort was not successful. In April 2002, the OVCDC

Figure 1-1 Project Location of USGS Map



again met with the Mayor. As the original request for funds could not be pursued without a CFD, the Mayor suggested requesting that the Governor appropriate funds to develop a plan for the region, which resulted in the release of \$500,000 by the Governor, and the beginning of the *Ka`u to South Kona Water Master Plan* in 2003 (Ibid.)

This plan involved meetings with community associations, farmers, social services agencies, government, and other area residents. Key issues raised included fire protection and the cost or unavailability of fire insurance; the hazard of lava inundation faced by Ocean View; the public health problems associated with catchment water systems; the fact that a lack of a public water system prevented the establishment of schools; the problems of maintaining catchment systems during persistent drought; the agricultural and economic potential that might ensue the provision of potable water; and preservation of the rural lifestyle (Ibid; p. 4-1 to 4-2). Total water needs for the area by the year 2020 were estimated at over 1.0 million gallons per day (mgd), based on a per person water use rate of 60 gallons per day and population projections calculated in the plan. In 2003, the 24 acres of commercial land in the HOVE Town Center required 72,000 gallons per day (gpd). If commercial/urban area expanded, as envisioned in the Hawai`i County General Plan, water demand could rise to over 100,000 gpd (Ibid: p. 1-12; Hawai`i County Planning Department 2005: Fig. 21).

Because of droughts, most residents and businesses must have their water hauled. According to *Ka`u to South Kona Water Master Plan*, the typical cost from Naalehu to Ocean View in 2004 was \$140 for 4,000 gallons. Water haulers fill their trucks at the Naalehu standpipe and pay DWS rates, about \$12 for 4,000 gallons. The \$128 difference between the customer cost and water cost can be attributed to overhead, fuel, labor, repair and maintenance, equipment depreciation, and profit by water haulers. Existing water haulers spend over two hours traveling to and from Naalehu. If standpipes were available in Ocean View, the reduced travel times and labor costs could save as much as \$64 per haul, equating to \$768 per household per year for each of the more than 1,000 households receiving a monthly 4,000-gallon haul (Hawai`i County Office of the Mayor 2004: p. 1-21).

The *Ka`u to South Kona Water Master Plan* proposed implementation of several long-range projects for water source development and transmission:

Well 1 and 2 at Ocean View at 2,180-foot elevation	\$8,168,710
Well 3 at Honomalino at 2,180-foot elevation	\$2,419,395
Waterline extension from Ho`okena to Opihihale, six miles	\$5,130,400
Agricultural wells in Honomalino and Ocean View	\$5,465,500
<b>TOTAL</b>	<b>\$21,184,005</b>

The plan also noted that the U.S. Geological Survey (USGS) planned to drill an exploratory well in Ocean View. Subsequently, the USGS did successfully drill this well within Hawaiian Ocean View Estates just below Highway 11. The test indicated that there is an aquifer appropriate for use as a water source (see Section 3.1.2 for major discussion of hydrology).

Implementation of the larger set of projects detailed in the *Ka`u to South Kona Water Master Plan* is outside the scope of the current effort. However, this plan did demonstrate that there is a need to provide a source of potable water within Ocean View. The proposed solution to providing a water source is the development of a well with associated conveyance system to a standpipe/spigot facility (fill site) to allow public access to potable water. The County of Hawai'i currently operates a fill site in town of Pahoa (Figure 1-3a), which is well-used and has helped alleviate a similar lack of domestic potable water in the Puna District.

In summary, the purposes of the project are to provide:

- County-operated potable water source and storage facilities in the Ocean View area;
- Readily accessible public spigots for residents to easily obtain their own drinking water;
- Standpipes for water hauling trucks to have a source closer to their customers, reducing the cost of water and providing a vital public health service; and
- A water line that can establish the basis for fire protection for Ocean View Town Center and Pohue Plaza.

## 1.2 Project Location and Description

The Ocean View Domestic Water Well, Reservoir, Transmission and Public Standpipe/Spigot Facility project, which was authorized and funded by the Hawai'i State Legislature and is being administered by the Hawai'i County Department of Water Supply (DWS), consists of:

- Drilling of an exploratory well on TMK 9-2-101:37, a one-acre property within Paradise Circle Makai in Ocean View (see Figure 1-2 for location and Appendix 1 for well section and site plans);
- Performance of pump tests and water quality analyses;
- If developable water of appropriate water quality is present, conversion of the exploratory well to a production well with an expected pump rate of 300 gallons per minute;
- Drilling a similarly sized backup well, if funding is sufficient, on this property, or on a directly adjacent part of TMK 9-2-101:32 (if deed restrictions and County Parks and Recreation Department concerns are resolved);
- If potable water is not developable at preferred site in Paradise Circle, drilling of a well on TMK 9-2-197:01, adjacent to existing USGS exploratory well.
- Construction of a 0.5 million gallon above-ground concrete or pre-stressed concrete reservoir adjacent to the well (see Figure 1-3a for photo of typical reservoir);
- Construction of control and electrical equipment facilities to operate and monitor the well pumps and other water systems;
- Construction of a 12-inch water transmission line within TMK 9-2-101:37 (and possibly parcel 32) 0.8 miles from Paradise Circle Makai along Keaka Parkway to TMKs 9-2-93:9, 10 & 11, a three-acre site at Lehua Lane and the Hawai'i Belt Road (see Figure 1-2 for location) (or, if USGS site used, an alternate transmission route to be determined; route will utilize existing roads and will make a crossing of State Hwy. 11);



Figure 1-2 Project Location on TMK Map

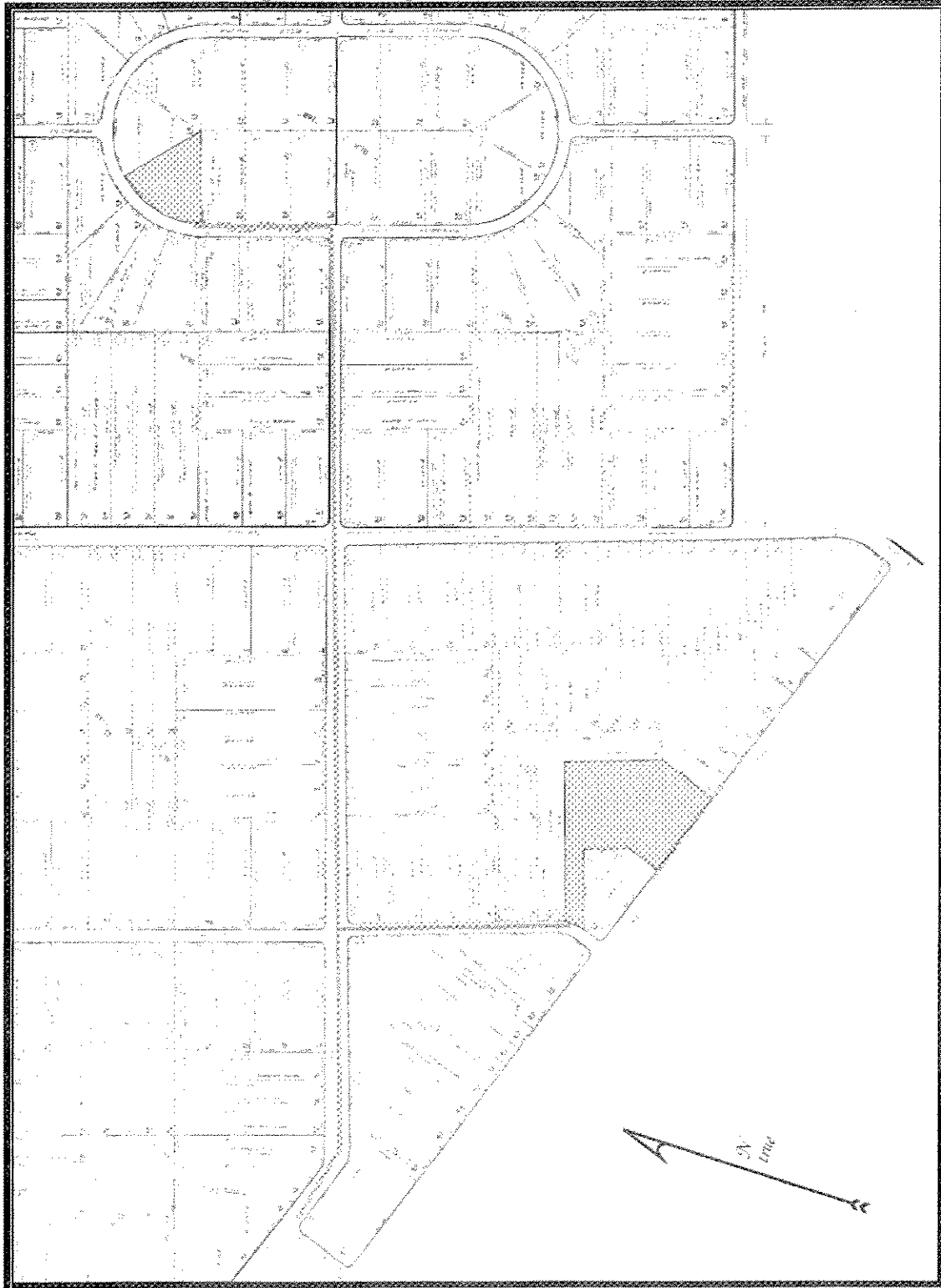
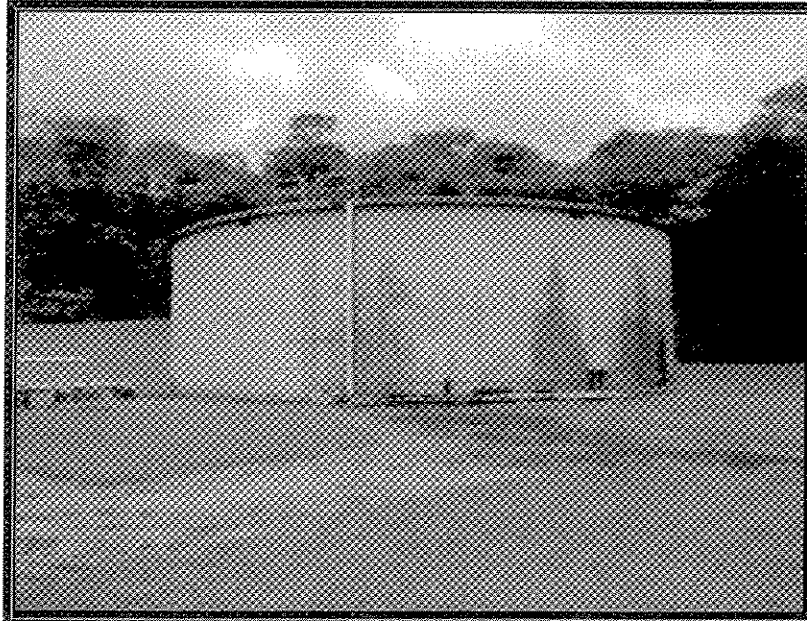


Figure 1-3 Photos of Typical Reservoir and Fill Site Facilities



Pahoa Standpipe and Spigot Fill Site ▲

Typical 0.5 million gallon tank (from mauiwater.org) ▼



- Construction and operation of a public standpipe/spigot facility at this site, where licensed water-hauling trucks will utilize the standpipes, and small-quantity residential self-haulers will use the spigots (see Figure 1-3b for photo of a typical fill site). The spigot and standpipe areas will be physically separated in order to increase safety and improve vehicular circulation. The site will be fenced and landscaped to reduce impacts to neighboring properties. Access to the facility will be via Lehua Lane. The hours of operation will be determined by DWS in coordination with a community group, who may also be called on to assist in management, policing and opening/closing the facility, if, as expected, hours of operation are restricted in order to reduce disturbance to neighbors during early morning and late evening.
- Provision of a branching water line to the end of Keaka Parkway and down Lotus Blossom Blvd. to provide for fire protection at the Ocean View Town Center and Pohue Plaza commercial centers, both situated off of Highway 11. The final alignment for this segment of the transmission line has not yet been determined, but it will involve portions of Keaka Parkway, Prince Kuhio Blvd, and a crossing of State Highway 11, as well as developed portions of TMKs 9-2-185:94, 95 and 96.

The project would proceed in two phases. Phase 1 is the permitting and drilling of the exploratory well and Phase 2 is the planning, design, contracting and outfitting of the well drilled during Phase 1, along with all other project features. Phase 1 is underway and the well drilling permit is anticipated during the summer of 2007. The drilling of the exploratory well is expected to be completed in the spring of 2008.

Design for Phase 2 of the project will be under the Design-Build model, and work related to the Request for Qualifications and Request for Proposals for the Design-Build Contract is scheduled to begin in July 2007 and to conclude in the spring of 2008 with a signed contract with a General Contractor. Detailed design of the reservoir, transmission water line, fill site and the well outfitting could begin immediately after the contract is signed. Construction is expected to be complete by fall/winter 2009. The total project, including design, is anticipated to cost approximately \$6.0 million.

### **1.3 Alternatives Considered**

#### **1.3.1 Alternative Sites**

The original planned location for the well and reservoir was identified through a community planning effort that was communicated to the Office of the Mayor (see Appendix 2). The site was TMK 9-2-101:32, a 6-acre area within Paradise Circle Mauka owned by the County of Hawai'i. The government ownership of the property would have reduced costs, the large size could have easily accommodated the planned uses, and the site had the proper elevational relation to where the water would be utilized. There was some concern that the well site would be within 1,000 feet of several existing cesspools and septic tanks, and that in the future there

might be as many as several dozen septic tanks within this radius. The great depth of the basal aquifer – more than 2,100 feet – essentially relieved these concerns. While a location far from septic tanks would be preferable, Ocean View is bounded at these elevations by a National Park, a State Natural Area Reserve, and a private property that does not appear available for use by the County. For all practical purposes, the well and reservoir site are constrained to be within the Hawaiian Ocean View Estates subdivision.

Based on the Paradise Circle Makai location, the fill site location was chosen, and surveys were undertaken of the well/reservoir site and the water transmission line route. Subsequently, it was determined that deed restrictions allowed only parks and schools on the Paradise Circle Makai property and that it was thus not available for use as a well/reservoir site. DWS continues to consider this an appropriate location for a backup well, if deed restrictions can be removed.

DWS look for alternative sites that could continue to take advantage of the chosen fill site and the survey work that had been conducted to date. A number of other vacant, one-acre properties in the area were examined in the field. The preferred property, TMK 9-2-101:37, was selected because it was adjacent to the original site, had a shape that could accommodate both the well and the reservoir within one acre, and had no apparent disadvantages that could not be mitigated.

As discussed in Section 1.2 above, the U.S. Geological Survey (USGS) drilled an exploratory well in Ocean View at a site on Kohala Boulevard in Hawaiian Ocean View Ranchos (TMK 9-2-197:001, 2.5419 acres), about 0.75 miles from the proposed well that is the subject of this EA (see Figure 1-1 for location). The USGS well provided basic hydrologic and geologic information for the aquifer, including water table elevations and chloride content. Samples indicated that the groundwater occurs as a thin basal lens in this vicinity and appears appropriate for use as a water source (see Section 3.1.2 for major discussion of hydrology). To avoid unfair competition with private well drillers, federal law prohibits using a USGS exploratory well as a conventional exploratory well or for a production well, and therefore the USGS exploratory well is not a practicable alternative. Also, the elevation of the USGS site was not high enough to be suitable for a reservoir that could serve the commercial areas, meaning that a separate site for the reservoir would have to be found. After evaluating comments at the May 23, 2007, public meeting, DWS has determined that if potable water is not developable at the project site, construction of a well and/or reservoir at the Kohala Blvd. site will be considered. Natural and cultural resources of the area had previously been studied in some detail as part of an application for a cell tower that was never constructed; the Final EA has added discussion of this site, which is referred to as the USGS site.

The fill site was also identified through a community planning effort communicated to the Office of the Mayor (see Appendix 2). The site is deemed favorable because three contiguous, undeveloped lots near the highway are for sale and available for purchase by the County and no sensitive environmental resources appear to be present.

### 1.3.2 Surface Water, Catchment, Wastewater Re-Use, and Desalination

No surface water is available in the area, which is composed of unweathered, highly permeable lava flows dating from within the last thousand or even hundred years. No permanent streams or natural lakes are present within 20 miles of the proposed well and fill sites.

Rainfall catchment is used in many parts of Hawai'i County, and in fact is an important source of household water for residents of Ocean View, where County water service is not available and the only option is to catch rain from the roof or to truck in water and store it in water tanks. Effective catchments depends on factors such as annual rainfall, the seasonality of rainfall, roof area, household demand, and the availability and cost of supplemental water. Most of these factors are highly unfavorable for Ocean View residents. Catchment provides a potable water source of last resort; however, it has many drawbacks, including high maintenance costs and susceptibility to microbiological and chemical contamination. Sources of these contaminants vary from dead animals in the storage tank to materials eroded or leached from roofs, gutters and paint. The State Department of Health (DOH) recommends using catchment water for non-consumptive needs and obtaining drinking or cooking water from regulated public water systems and/or purchased bottled drinking water.

Wastewater re-use can be an important source of water, particularly for irrigation, although treatment expense may elevate the cost of the water beyond the budget of agricultural users. If water shortages are critical, the cost of treated wastewater can be borne by municipal users, who may then utilize surface water or groundwater that would otherwise be used for irrigation. Ocean View lacks municipal wastewater treatment, and it is impractical for reasons of economy of scale and technology for residents to treat their own wastewater to derive drinking water.

Similarly, DWS and other agencies concerned with developing and utilizing water on the Big Island consider desalination, an energy-intensive and expensive process, to be unjustified for cost reasons on the Island of Hawai'i and unnecessary to consider when better options exist. For Ocean View, located between 600 and 5,000 feet in elevation and two to eleven miles from the coast, desalination is also not suitable.

### **1.3.3 Extending Transmission Lines from Existing Water Systems**

The closest County water system is found near South Point Road, about six miles to the east of the eastern edge of Ocean View. Other systems in Waiohinu and Ho'okena are much farther. Although these systems could provide high quality water, the cost of developing additional source at these systems, acquiring right-of way and building the necessary water transmission and storage systems would likely be at least double the cost of building a new system in Ocean View.

### **1.3.4 Selection of Project Alternative**

DWS has determined that the most rational and efficient strategy for dealing with the need in Ocean View for a source of potable water for self-hauling residents and water trucks, along with fire protection for Ocean View's commercial centers, is to undertake the project proposed in this EA, i.e., to construct a well and reservoir within Ocean View with associated water transmission lines and a nearby fill site located near the Hawai'i Belt Road. The decision to advance this alternative was based on cost, the appropriate head and salinity results from the nearby USGS

exploratory well, the expected lack of impact on aquifer sustainability (see Section 3.1.3), and the fact that no alternative sources (such as catchment, wastewater reuse, or desalination) would provide a practical or economical source of potable water in this service area.

## 1.4 Consistency with Government Plans and Policies

The project is highly consistent with government plans and policies, which call for water systems that meet the needs of residents, support planned rural and limited urban expansion growth, and minimize environmental degradation. Section 1.1 above, discusses the origin of the project as one of the key components of the *Ka`u to South Kona Water Master Plan*. The following sections discuss consistency with other key plans.

### 1.4.1 Hawai`i State Plan

The Hawai`i State Plan was adopted in 1978. It was revised in 1986 and again in 1991 (Hawai`i Revised Statutes, Chapter 226, as amended). The Plan establishes a set of goals, objectives and policies that are meant to guide the State's long-run growth and development activities. The proposed project is consistent with State goals and objectives pertaining to greater employment, income and job choices, and a growing, diversified economic base for the neighbor islands. The sections of the Hawai`i State Plan most relevant to the proposed project are centered on the theme of facility systems. The following objectives and policies are taken from the water development section of the State Plan.

- Objective a): Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational and other needs within resource capacities.
- Objective b): To achieve the facility systems water objective, it shall be the policy of this State to:
  - (1) Coordinate development of land use activities with existing and potential water supply.
  - (2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.
  - (3) Reclaim and encourage the productive use of runoff water and wastewater discharges.
  - (4) Assist in improving the quality, efficiency, service and storage capabilities of water systems for domestic and agricultural use.
  - (5) Support water supply services to areas experiencing critical water problems.
  - (6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.

The proposed project supports all relevant objectives and policies of the Hawai`i State Plan.

### 1.4.2 Hawai`i Water Plan

The *Hawai`i Water Plan* addresses water resource protection, water quality, and development plans related to each individual county, to State projects, and to agricultural water systems. The most relevant plans for this discussion are the *Hawai`i State Water Resources Development Plan* (Hawai`i DLNR 1980), the *Water Resources Protection Plan* (Hawai`i State CWRM 1992) and the *State Water Projects Plan, Volume 2, Island of Hawai`i* (Hawai`i State Commission on Water Resources Management 2003).

The purpose of the *Hawai`i State Water Resources Development Plan* is to set forth specific objectives, policies, programs and projects to guide State and County governments. In summary, this plan presents guidelines for development of water resources for municipal, agricultural and industrial requirements; preservation of ecological, recreational, and aesthetic values and quality; and regulation of the use of water to assure adequate supplies for the future. The proposed project would develop a municipal water source in a rational manner to improve drinking water quality, assure adequate water for planned growth and would not adversely affect ecological, recreational or aesthetic values. The project is thus consistent with the basic guidelines of the plan.

In particular, the following objectives are noteworthy:

- Objective A. Assure adequate municipal water supplies for planned urban growth.
- Objective B. Support long-range municipal water supply planning by the counties.
- Objective C. Promote municipal water conservation.
- Objective D. Improve drinking water quality.
- Objective E. Upgrade rural water systems.

The proposed project supports or is not inconsistent with each objective of the plan.

The *Water Resources Protection Plan* inventoried the water resources of the State, determined the sustainable yields based on available data, and recommended means of conserving and augmenting these resources. As discussed in Section 3.1.2, because there is no recognized current or foreseeable threat of exceeding sustainable levels of withdrawal from the aquifers in this area, none have been declared a Groundwater Management Area by the State Commission on Water Resources Management.

The primary objective of the *State Water Projects Plan, Volume 2, Island of Hawai`i* (SWPP) is to provide a framework for the planning and implementation of water development strategy for future State projects such as Department of Hawaiian Home Lands subdivisions, University campuses, and major recreation areas. No significant State projects requiring water planning were mentioned for the Ocean View area.

### 1.4.3 Hawai'i County Water Use and Development Plan

The *Hawai'i County Water Use and Development Plan* (HCWUDP) (Hawai'i County DWS 1989) is the most recent Hawai'i County water plan to be formally adopted by DWS and the Hawai'i State Commission on Water Resource Management (CWRM).<sup>1</sup> The HCWUDP is meant to aid CWRM in granting permits for water use and designating water management areas, as well as serving as a reference document of current and future water resource conditions. The HCWUDP includes an inventory of existing water uses and developments by hydrologic units, addresses future land uses and related water needs, and is consistent with State and County land and water policies. This plan also guides DWS in future operations and in identifying the improvements and facilities required to continue to provide safe, affordable and reliable water service to the island of Hawai'i in a sustainable and financially secure manner. In 1989, the HCWUDP did not mention Ocean View or its water needs in the discussion related to Ka'u, which is partially a measure of the significant growth that has occurred in the last 20 years.

### 1.4.4 Hawai'i County

The *General Plan* for the County of Hawai'i is the document expressing the broad goals and policies for the long-range development of the Island of Hawai'i. The latest plan was adopted by ordinance in 2005. The *General Plan* is organized into thirteen elements, with policies, objectives, standards, and principles for each. There are also discussions of the specific applicability of each element to the nine judicial districts comprising the County of Hawai'i. Below are pertinent Goals, Objectives, Policies and Standards, and Courses of Action sections related to Water Systems Development, followed by a discussion of conformance. In addition, the most relevant sections of aspects of the General Plan are briefly discussed.

#### 1.4.4.1 General Plan and Water Systems

##### POLICIES

- o Water system improvements shall correlate with the County's desired land use development pattern.
- o All water systems shall be designed and built to Department of Water Supply standards.
- o Improve and replace inadequate systems.
- o Water sources shall be adequately protected to prevent depletion and contamination from natural and man-made occurrences or events.
- o Water system improvements should be first installed in areas that have established

<sup>1</sup> An update of the Plan (Hawai'i County DWS 1991) was performed but never formally adopted. The update contained no significant differences concerning water use or water facility needs for the Ka'u area. An updated plan is currently in preparation.



- needs and characteristics, such as occupied dwellings, agricultural operations and other uses, or in areas adjacent to them if there is need for urban expansion.
- o A coordinated effort by County, State and private interests shall be developed to identify sources of additional water supply and be implemented to ensure the development of sufficient quantities of water for existing and future needs of high growth areas and agricultural production.
- o The fire prevention systems shall be coordinated with water distribution systems in order to ensure water supplies for fire protection purposes.
- o Develop and adopt standards for individual water catchment units.
- o Cooperate with the State Department of Health to develop standards and/or guidelines for the construction and use of rainwater catchment systems to minimize the intrusion of any chemical and microbiological contaminants.
- o Cooperate with appropriate State and Federal agencies and the private sector to develop, improve and expand agricultural water systems in appropriate areas on the island.
- o Promote the use of ground water sources to meet State Department of Health water quality standards.
- o Continue to participate in the United States Geological Survey's exploratory well drilling program.
- o Seek State and Federal funds to assist in financing projects to bring the County into compliance with the Safe Drinking Water Act.
- o Develop and adopt a water master plan that will consider water yield, present and future demand, alternative sources of water, guidelines and policies for the issuing of water commitments.
- o Expand programs to provide for agricultural irrigation water.

#### STANDARD

- o Public and private water systems shall meet the requirements of the Department of Water Supply and the Subdivision Control Code.

#### COURSES OF ACTION FOR KA`U

- o Provide additional water system improvements for the currently serviced areas of Naalehu, Waiohinu, and Pahala.
- o Pursue groundwater source investigation, exploration and well development at Ocean View, Pahala, and Waiohinu.
- o Continue to evaluate growth conditions to coordinate improvements as required to the existing water system.

- Investigate alternative means to finance the extension of water systems to subdivisions that rely on catchment.

Discussion: The proposed project is consistent with most elements of the General Plan dealing with water systems, and in particular with courses of action for Ka`u. Implementation of the proposed project would not conflict with any goals, policies or courses of action, and would, in fact, contribute to their fulfillment.

#### **1.4.4.2 Other Selected Elements of General Plan**

##### **ECONOMIC GOALS**

- Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County's cultural, natural and social environment.

##### **ENVIRONMENTAL QUALITY POLICIES**

- Take positive action to further maintain the quality of the environment for residents both in the present and in the future.

##### **ENVIRONMENTAL QUALITY STANDARDS**

- Pollution shall be prevented, abated, and controlled at levels that will protect and preserve the public health and well being, through the enforcement of appropriate Federal, State and County standards.
- Incorporate environmental quality controls either as standards in appropriate ordinances or as conditions of approval.

##### **HISTORIC SITES GOALS**

- Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawai'i.

##### **HISTORIC SITES POLICIES**

- Require both public and private developers of land to provide historical and archaeological surveys and cultural assessments, where appropriate, prior to the clearing or development of land when there are indications that the land under consideration has historical significance.
- Public access to significant historic sites and objects shall be acquired, where appropriate.

#### AGRICULTURAL LAND GOALS

- o Identify, protect and maintain important agriculture lands on the Island of Hawaii.
- o Preserve the agricultural character of the island.

#### FLOOD CONTROL AND DRAINAGE GOALS

- o Control pollution.
- o Prevent damage from inundation.
- o Reduce surface water and sediment runoff

#### FLOOD CONTROL AND DRAINAGE POLICIES

- o Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works and in compliance with all State and Federal laws.

#### FLOOD CONTROL AND DRAINAGE STANDARDS

- o Applicable standards and regulations of Chapter 27, "Flood Control," of the Hawaii County Code.
- o Applicable standards and regulations of the Federal Emergency Management Agency (FEMA).
- o Applicable standards and regulations of Chapter 10, "Erosion and Sedimentation Control," of the Hawaii County Code.

#### NATURAL BEAUTY GOALS

- o Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.
- o Protect scenic vistas and view planes from becoming obstructed.

#### NATURAL BEAUTY POLICIES

- o Protect the views of areas endowed with natural beauty by carefully considering the effects of proposed construction during all land use reviews.
- o Do not allow incompatible construction in areas of natural beauty.

#### NATURAL RESOURCES AND SHORELINES GOALS

- o Protect and conserve the natural resources of the County of Hawaii from undue exploitation, encroachment and damage.
- o Ensure that alterations to existing land forms and vegetation, except crops, and

construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of earthquake.

Discussion: The project is generally consistent with these aspects of the General Plan. It will encourage economic opportunities that are compatible with the County's cultural, natural and social environment, the quality of which will be maintained. Historic sites or agricultural lands will not be adversely impacted. The improvements will not encroach into a flood zone or cause any other adverse drainage impact. Finally, the natural beauty and natural resources of the Ocean View area will not be adversely affected directly or indirectly by the proposed project.

## 2 ENVIRONMENTAL ASSESSMENT PROCESS

The project involves the use of County of Hawai'i funds, and therefore requires compliance with Chapter 343, Hawai'i Revised Statutes (HRS), the Hawai'i Environmental Policy Act (HEPA). The County of Hawai'i, Department of Water Supply, (DWS) is the proposing agency for this Environmental Assessment (EA).

HEPA was enacted by the Hawai'i State Legislature to require State and County agencies to consider the environmental impacts of various actions as part of the decision-making process. Agencies are required to conduct an investigation and evaluation of alternatives as part of the environmental impact analysis process, prior to making decisions that may impact the environment. The implementing regulations for HEPA are contained in Title 11, Chapter 200, Hawai'i Administrative Rules (HAR).

This Environmental Assessment (EA) process was conducted in accordance with HEPA. According to HEPA and its implementing regulations, a Draft EA is prepared to document environmental conditions and impacts, to develop mitigation measures that avoid, minimize or compensate for adverse environmental impacts, and determine whether or not an action has significant impacts upon the environment. Impacts are evaluated for significance according to thirteen specific criteria as presented in HAR 11-200-12. If no significant impacts are expected, then a Final EA with a Finding of No Significant Impact (FONSI) may be issued. When the Draft EA determines that significant impacts are present, then a Notice of Intent is prepared and the Final EA facilitates preparation of an Environmental Impact Statement (EIS).

It should be noted that OEQC guidelines suggest that separate Environmental Assessments should be prepared for exploratory and production wells. The basic purpose of having two separate EAs is to allow review of data from the pump tests for the exploratory well. In some areas of the State of Hawai'i, these data may contain crucial environmental information, or negative results may indicate a need for another exploratory well in a different location. Pump tests may indicate that groundwater is not present where it was suspected to exist, or not present in sufficient quantities to economically pump, or that pumping of an exploratory well adversely affects other wells nearby or nearby water bodies, or that water has a high chloride content or is contaminated by natural or human sources. Of all these issues, effects on nearby wells is of key importance, because the other issues are essentially questions of cost-benefit or proceed/do not proceed decisions, rather than concerns that would benefit from additional environmental assessment. It is important to note that EAs that cover exploratory wells may not cover wider socioeconomic and planning issues, as these are considered premature and may be dealt with in the EA for the production well.

DWS decided that, in this case, the most rational course of action was to combine the exploratory and production well environmental assessments into one, for the following specific reasons:

- Data on the height of the head and the chloride levels of a USGS exploratory well nearby strongly indicate that a basal aquifer area capable of supporting a well pumping 300 gallons per minute exists in this area.
- Despite the presence of several septic tanks and cesspools, the nature of the underlying geology and depth to the aquifer indicate that the possibility for aquifer contamination is slight.
- There are no nearby production wells that could conceivably be affected by pumping at the test well location, as the cone of depression in such aquifers rarely extends more than a few hundred feet and the nearest production wells are several miles away and apparently not in use.
- In some aquifers, sustainable yield is a critical question; in the Manuka Aquifer, in which installed capacity is less than 3 percent of estimated sustainable yield, there is clearly no risk of regional aquifer depletion.
- There is no other reason, environmental or other, for preparation of two separate EAs. Socioeconomic and planning issues have been fully considered. Including the information in one EA will save time and money for this vitally necessary project.

### 3 ENVIRONMENTAL SETTING AND IMPACTS

This section describes the existing social, economic, cultural, and environmental conditions surrounding the proposed project along with the probable impacts of the proposed action and mitigation measures designed to reduce or eliminate adverse environmental impacts. For purposes of the EA, the term *project site* will be used to refer to the reservoir and well site (including the alternative USGS site), the potential backup well site adjacent, the area that would be occupied by the water transmission lines, and the fill site. The term *project area* is a more general and flexible term that may apply to directly adjacent areas, Ocean View as a whole, or Ka`u.

For many categories, the No Build Alternative would result in no impacts. Therefore, unless explicitly mentioned, discussion of impacts and mitigation relates to the Build Alternative only.

#### 3.1 Physical Environment

##### 3.1.1 Surface Geology and Hazards

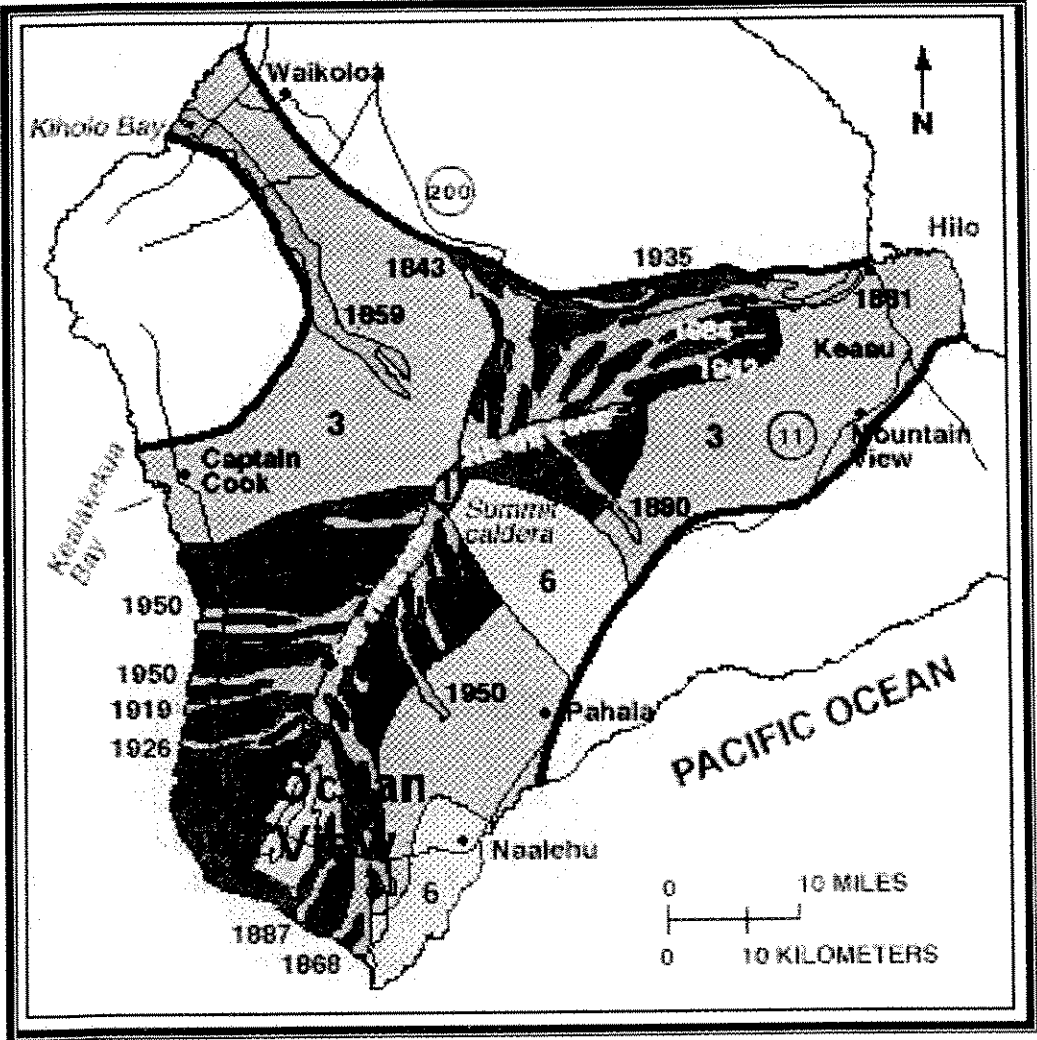
###### *Existing Environment*

The surface geology of the project site consists of mostly ‘a‘a basaltic lava flows of the Ka`u volcanic series that were erupted from Mauna Loa between 750 and 3,000 years ago (Wolfe and Morris 1996). The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. The project site is located in Lava Flow Hazard Zone 2 (second highest on a scale of ascending risk 9 to 1) (Figure 3-1). In Zone 2 on Mauna Loa, approximately 75 percent of the land area has been covered by lava in the last 750 years, 20 percent since 1800, and 5 percent since 1950. Much of Ocean View is covered with lava from the 1907 flow. As such, there is at least some risk of lava inundation over short time scales on the subject property.

In terms of seismic risk, the entire Island of Hawai‘i is rated Zone 4 Seismic Probability Rating (Uniform Building Code, Appendix Chapter 25, Section 2518). Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built, as the 6.7-magnitude (Richter) quake of October 15, 2006, demonstrated.

Lava tubes and other caves in Hawai‘i may have value as historic sites, burial locations, recreation areas, as unique geological features, or for other reasons. Reconnaissance has found no lava tube caves in the affected area, aside from a known cave at the USGS site which could be avoided during construction.

Figure 3-1  
Lava Flows and Lava Flow Hazards



*Impacts and Mitigation Measures*

In general, geologic conditions do not appear to impose any overriding constraints on the project, and no mitigation measures other than ensuring a seismically appropriate design, in conformance with standard DWS policy, are required. However, it is recognized that most of the surface of the Big Island is subject to eventual lava inundation, and that buildings and infrastructure in places such as Ocean View face risk. Water facilities that conveniently serve the Ocean View area cannot reasonably be located elsewhere. On balance, the County believes that it is economically and environmentally sensible to provide potable water closer to the community that needs it, despite the risk of lava inundation.



### 3.1.2 Groundwater Hydrology

#### *Existing Environment*

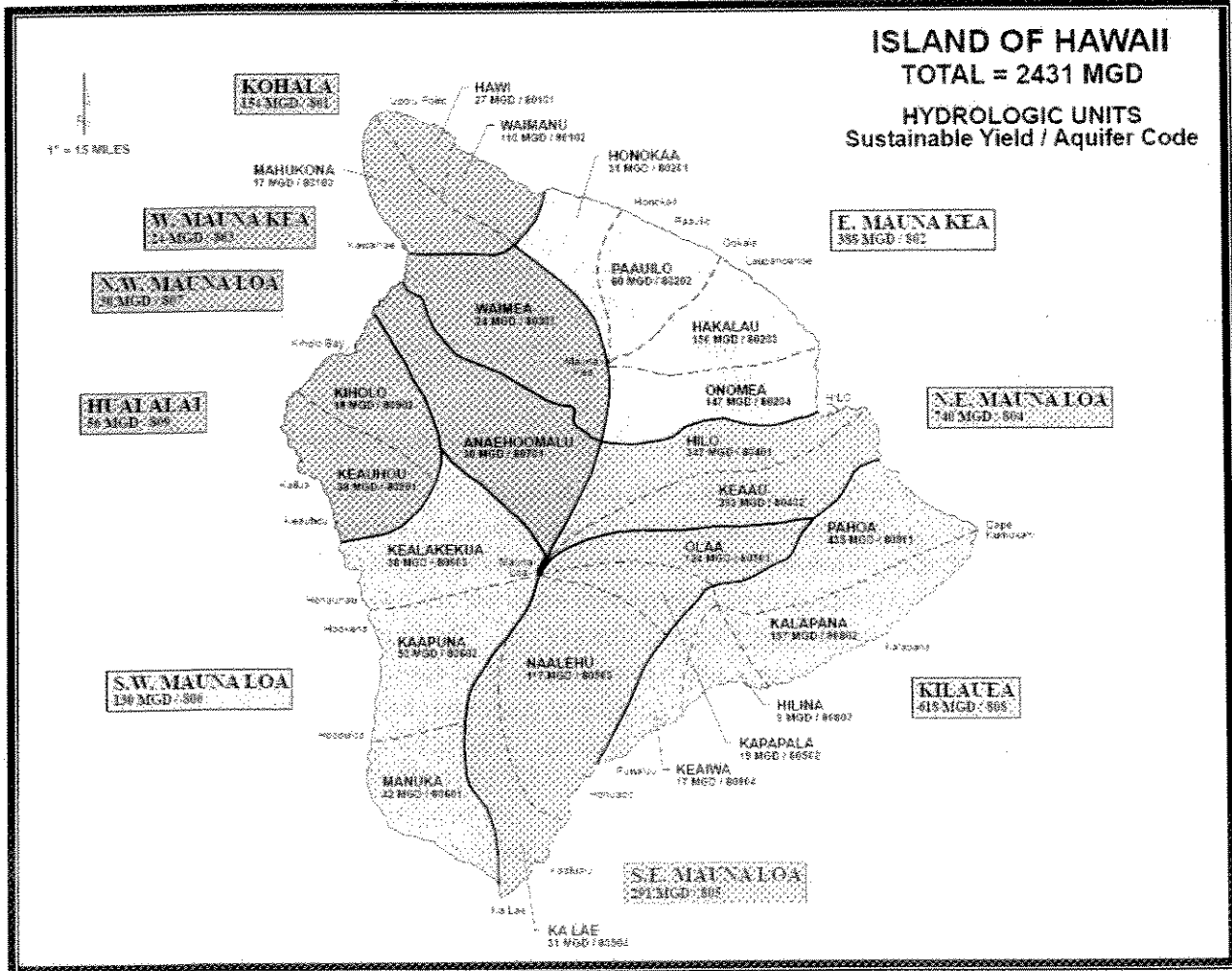
##### Hydrogeological Setting

Precipitation that is not lost through evapotranspiration or through streams into the ocean percolates into the ground to collect in aquifers under the island that slowly leak water into the sea. As streams in Hawai'i are generally flashy or even ephemeral, underground water is the most reliable source of water supply, because there is less daily or seasonal change in water tables. Most water is maintained in the basal freshwater lens that "floats" on the salt-water permeated rock below, but in some locations, substantial quantities of water are trapped between dikes or perched above confining ash layers.

The State Commission on Water Resources Management (CWRM) classification of aquifers locates this part of Ka'u within the Manuka Aquifer System (80601) of the Southwest Mauna Loa Hydrologic Sector. The surface boundaries of these aquifer systems are shown in Figure 3-2. The boundaries roughly follow a northwest to southeast ridge line on Mauna Loa. The recharge area for the Manuka Aquifer System is assumed to consist of essentially the surface area contained within the boundaries of the aquifer system. The extent of contribution from or leakage into adjacent aquifer systems is not known. The Manuka System covers 167 square miles and receives an average rainfall of 49 inches per year, yielding an estimated groundwater recharge of 96 mgd (million gallons per day). The area's Holocene lava flows are underlain at an undetermined depth by older basaltic lava flows of the Kahuku volcanic series of Mauna Loa, and the lava flows of both volcanic series are generally very permeable. Median annual rainfall ranges from 75 inches a year at two miles inland of the well site at the 3,000-foot elevation, to 50 inches a year 2.5 miles makai of the HOVE site at the 1,000-foot elevation. CWRM has estimated the sustainable yield of the Manuka System at 42 mgd (see Figure 3-2), based on an assumed initial basal head of 4 feet. Groundwater characteristics in the Ocean View area are not well known, largely because of the sparse network of wells that might provide data. Based on sparse well data, coastal groundwater occurrence in the Manuka System is estimated to consist generally of a thin brackish basal lens of less than four feet head.

The United States Geological Survey (USGS) drilled an exploratory well in Ocean View about 0.75 miles west of the preferred DWS well site. The USGS exploratory well program is designed to provide basic hydrologic and geologic information, especially water table elevations and chloride content, for aquifers in the counties. This exploratory well was not intended to determine the sustainable yield of the Manuka aquifer and did not provide a comprehensive water quality evaluation. The head of the exploratory well in Ocean View measured 3.5 feet above mean sea level (msl), and the chloride content was 82 mg/L, indicating that groundwater occurs as a thin basal lens in the vicinity. These data indicate that the aquifer is appropriate for use as potable water source pumping at a rate of 200 to 300 gallons per minute.

**Figure 3-2  
Aquifer Sectors and Hydrologic Units**



No aquifers designated as Principal or Sole-Source aquifers are located in the Ka'u area or indeed on the island of Hawai'i (Source: *Designated Sole Source Aquifers in EPA Region IX*, [www.epa.gov/safewater/swp/ssa/reg9.html](http://www.epa.gov/safewater/swp/ssa/reg9.html). U.S. Environmental Protection Agency web page, checked April 2007). There are no State Wellhead Protection Plans in force in or near the project corridor.

Current Estimated Installed Capacity and Water Use

CWRM maintains a database of wells that provides information on, among other aspects, the aquifer identity, user identity, installed capacity, chloride content, and function. The database does not provide information on current pumpage, which instead is logged in a separate database that relies on reports from individual well operators. Because not all well operators report their

use in a timely manner, pumpage data may not be complete or up to date. Owing to security concerns after September 11, 2001, these databases are no longer accessible to the public and data must be requested from CWRM, which was done for this EA.

The well database has a register of four wells within the Manuka Aquifer System drilled for agricultural, domestic or recharge purposes (the USGS exploratory well is not included). Except for the USGS well (Well No. 0445-01), no known wells are within a mile of the proposed well. The next nearest one (Well No. 0246-01) is located approximately 3.0 miles due south of the HOVE site and approximately 3.2 miles from the coast at Pohue Bay, at about 1,000 feet above msl. Well reports indicate (1) a reported head of 9.5 ft., (2) chloride content of 300 mg/L, and (3) a total depth of 58 ft. below sea level. A third well (Well No. 0247-01), 1.7 miles west-southwest of the second well has a reported head of 7.8 ft. and a chloride content of 760 mg/L. Based on data from the USGS well, the reported heads for these wells may be higher than their actual values.

The installed capacity for the wells listed in the database is 1.18 mgd (or less than 3 percent of sustainable yield, if all pumps run full capacity 24 hours a day). No reported well yield data are available (Hawai'i State CWRM 2007), and it appears that none of these wells are actually in use.

#### Existing Water Quality

The Hawai'i DWS regularly conducts microbiological analysis and contracts for extensive chemical testing in order to comply with U.S. Environmental Protection Agency (EPA) and Hawai'i State standards. Table 3-1 depicts the contaminants tested for and the frequency of testing.

As DWS operates no wells in or near the Manuka Aquifer System, annual water quality reports are not available. In general, the entire DWS system is compliant with all current State of Hawai'i and U.S. Environmental Protection Agency drinking water standards. Specifically, no violations were recorded for radioactive, inorganic, organic or lead and copper contaminants, with all contaminants far below Maximum Contaminant Levels (MCLs).

#### Other Planned Uses in Aquifers and Issues of Concern

Aside from the proposed DWS well, no new wells are reported to be in planning in the near future in the area, including any projects discussed in the *State Water Projects Plan, Volume 2, Island of Hawai'i* (SWPP) (Hawai'i State CWRM 2003).

**Table 3-1  
Summary of Current Water Quality Monitoring Requirements**

<b>CONSTITUENT</b>		
Bacteriological	Distribution system	Monthly; number of samples dependent on population served within distribution system
Carbamate, Nitrate, Metals, Inorganic, THM / HAA5 VOC, SOC8, Glyphosate EDB / DBCP / TCP	Entry point to distribution AND/OR Well Head (Location is dependent on contaminant being sampled for. SDWB will specify.)	Quarterly.
Asbestos	Source/distribution along AC pipe	First 3-year compliance period of 9-year cycle
Nitrate EDB / DBCP / TCP Metals, SOC8, VOC	Entry point to distribution AND/OR Well Head (Location is dependent on contaminant being sampled for. SDWB will specify.)	Annually
Lead and copper	Customer taps	For systems that have passed, once every three years. For systems that have failed, then once every six months until system passes, then once every three years thereafter.
Reduced Monitoring for Populations <=3300: Metals / VOC (ALL Groundwater sources; ALL Populations) SOC8, EDB / DBCP / TCP Glyphosate, Carbamate Herbicides	Entry point to distribution AND/OR Well Head (Location is dependent on contaminant being sampled for. SDWB will specify.)	Once every 3 years (R1/1)
Reduced Monitoring for Populations >3300: SOC8, EDB / DBCP / TCP Glyphosate, Carbamate Herbicides	Entry point to distribution AND/OR Well Head (Location is dependent on contaminant being sampled for. SDWB will specify.)	Twice every 3 years.
Radionuclides	Source	Once every 5 years.

Source: Hawai'i County Department of Water Supply. SDWB = Hawai'i State Department of Health, Safe Drinking Water Branch.

### *Impacts and Mitigation Measures*

The only nearby well is the USGS exploratory well, located about 0.75 miles at a slightly lower elevation from the preferred well site. This distance is large enough so that little or no interaction is expected between the two wells, although if the alternate USGS site was used for a production well the exploratory well could be utilized for a monitoring well, if desired. Based on the lack of other wells operating in the Manuka Aquifer System and the installed capacity of the proposed HOVE well represents less than 3 percent of the sustainable yield of 42 million gallons per day, the expected pumping rate of 300,000 gallons per day would have virtually no impact on the sustainability of the aquifer nor on any other wells.

Moreover, considering the land use context and the cost of building wells and water systems, it is unlikely that significant withdrawals relative to the aquifer's estimated sustainable yield would occur even if many new wells are brought on line. In any case, however, as any new well is developed, analysis of the installed capacity, sustainable yield of the aquifer, and hydrologic impacts will be undertaken in accordance with requirements of the State Commission of Water Resources Management. The long-term records of salinity, pumpage and water levels that will be maintained by DWS will assist in protecting the long-term sustainability of the aquifer.

The Underground Injection Control (UIC) line in the Ocean View area is located within a few hundred feet of the coast (Fig. 3-3). The well site and its recharge area are thus mauka of the UIC line, where underlying aquifers are considered drinking water sources and injection wells may be prohibited and are subject to stringent permit requirements to ensure they do not contaminate aquifers.

A Phase I Environmental Site Assessment (ESA) was performed on the well/reservoir site by DR Associates (Appendix 3) (a Phase I ESA would also be conducted for the USGS site if it were selected). The report is summarized below and contained in full in Appendix 3. A Phase I ESA aims to identify *recognized environmental conditions* that exist on the project site, and existing *recognized environmental conditions* in the project area that have the potential to impact the subject property. The term *recognized environmental conditions* means the presence or likely presence of any hazardous substances or petroleum products on the property under conditions that indicate an existing release, a past release, or a material threat of a release into structures on the property or into the ground, groundwater, or surface water of the property. In a Phase I ESA, evidence of *recognized environmental conditions* may be discovered by execution of the following:

- A records search of federal and State databases of hazardous material use, storage, and releases, including, but not limited to, hazardous material generators, leaking underground storage tanks, and reported hazardous material releases;
- Interviews with landowners, nearby residents, and regulatory agency members concerning the subject property's history of land use;
- Other records searches, including tax records, aerial photography, and, when available, fire insurance maps; and
- A visual survey of the property and immediately surrounding areas.

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*Phase I ESA Findings*

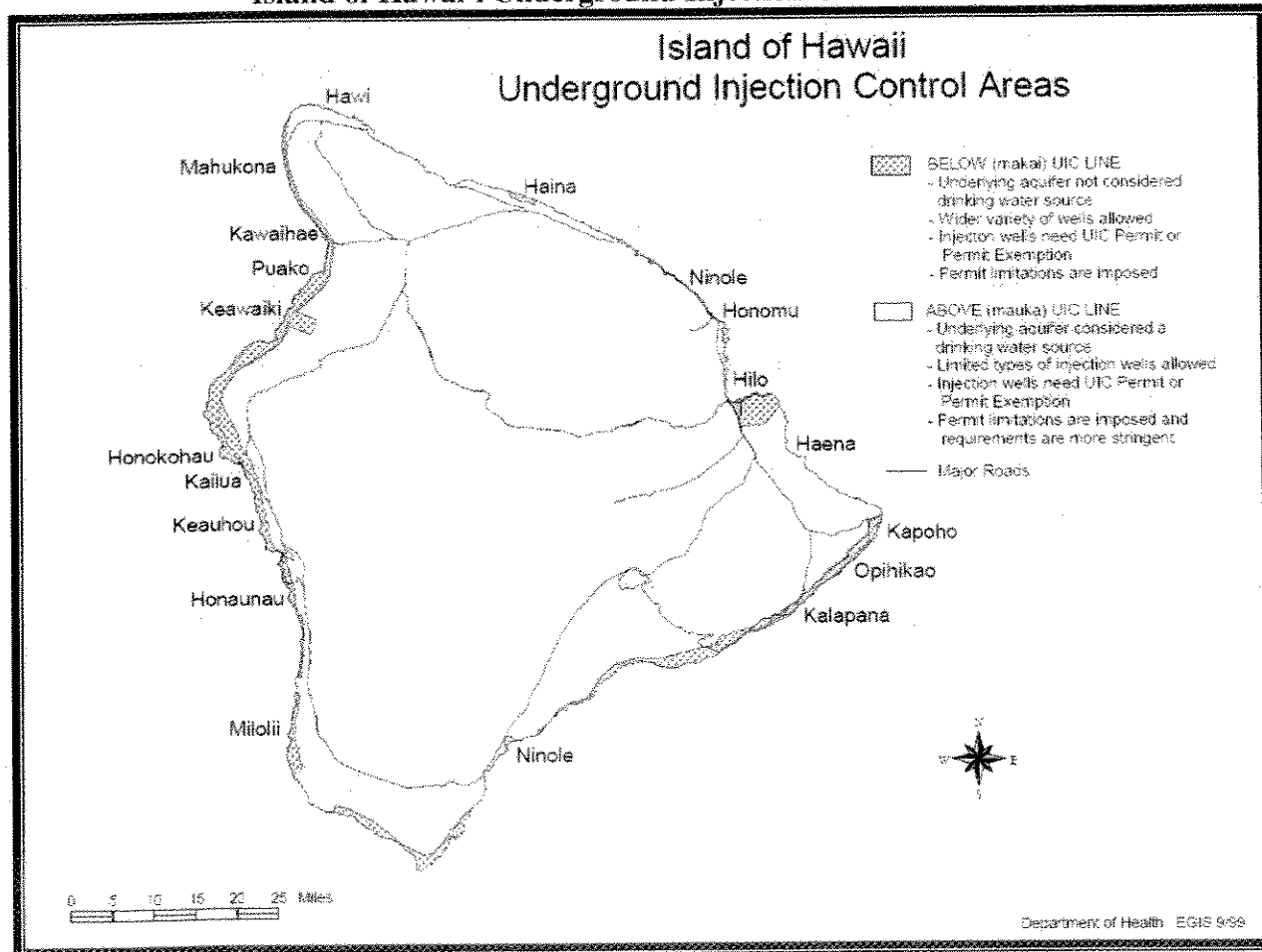
The conclusions and recommendations presented below are based on the preferred well site reconnaissance, historical review, interviews, subsurface sampling and record review:

- The original modern use of the area, which was part of Kahuku Ranch, was for grazing, though poor vegetation and difficult terrain probably limited grazing in the immediate vicinity of the subject property. There is no evidence of any building or other use of the property throughout its history except as noted below.
- An individual wastewater system is installed on the property by the current owner. Installation required the use of heavy equipment, which may have leaked oil or hydraulic fluids during construction. No indications of a release was noted on inspection.
- No evidence of use or release of hazardous materials and/or petroleum products on adjacent parcels was found from site reconnaissance, interviews or public records.
- The proposed use of the property for a municipal water source is quite compatible with the rural residential surroundings, but due to the recent lava formations, lack of soil, and high permeability of the substrate, groundwater at the site may be susceptible to contamination from above.
- With the exception noted above, this assessment found no evidence of environmental conditions that would limit the use, activities, value or utility of the property.

In regard to the point about potential contamination of the water source, the area near the proposed well appears to be free of any major contaminant source. The primary source of contamination of the basal aquifer will be from residential land use on the higher slopes directly above the well site. As discussed in Section 1.3.1, during siting of the well there was concern that it would be within 1,000 feet of several existing cesspools and septic tanks, and that in the future there might be as many as several dozen septic tanks within this radius. While a location far from septic tanks would be preferable, Ocean View is bounded at these elevations by a National Park, a State Natural Area Reserve, and a private property that does not appear available for use by the County. For all practical purposes, the well and reservoir site are constrained to be within the Hawaiian Ocean View Estates subdivision. However, the basal aquifer below the preferred and alternative well sites is some 2,000 feet below the surface and even deeper in the well's recharge area. Since the well will be fully grouted to a minimum depth of 500 feet and within basalt sections to a depth of 1,500 feet, no surface or near-surface contamination of the groundwater aquifer is expected to occur beyond that of pre-development conditions.

Considering the expected depth of the well and the lack of past or current potential significant sources of contamination, good water quality is expected from the exploratory well. However, the well will be subject to stringent water quality tests during the exploratory well phase. Testing will occur again when the well is converted from exploratory to production and thereafter on an annual basis by DWS. In this setting, water quality will likely remain high, and no mitigation

**Figure 3-3**  
**Island of Hawai'i Underground Injection Control Areas**



measures other than standard periodic testing are required. The project is expected to be in full compliance with all requirements of the Safe Drinking Water Act, (42 U.S.C §300H-3[e]).

### 3.1.3 Floodplains and Surface Water Quality

#### *Existing Environment*

Because of its recent lava and moderately dry climate, Ocean View is an area of minimal flooding hazard, and the floodplain status for the proposed well/reservoir, water transmission lines, and fill sites are unmapped in Flood Insurance Rate Maps. The area is therefore designated Zone X, or Special Flood Hazard areas identified in the community flood insurance study as areas of moderate or minimal hazard from the principal source of flood in the area.

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### *Impacts and Mitigation Measures*

The project will add very minimally to the area of impermeable surface, and there will thus be a slight increase in stormwater runoff. This increase will be minimal in comparison to the entire drainage basin and should not affect the overall drainage of the area. The final design of the reservoir and fill station site will include the use of “shallow” drywells or other mechanisms to infiltrate the stormwater runoff into the ground. Based on the proposed drainage improvements, the project is not expected to have a significant impact on the existing drainage in the area.

In any project, uncontrolled excess sediment from soil erosion during and after excavation and construction has the potential to impact natural watercourses, water quality and flooding potential. Contaminants associated with heavy equipment and other sources during construction have the potential to impact ground water if not mitigated effectively.

Provisions will be made during the construction grading and earthwork to minimize soil erosion and off-site sediment transport. A Pollution Control Plan and a Stormwater Pollution Prevention Plan will be implemented to ensure that the proposed improvements do not cause drainage or water quality impacts. Best Management Practices (BMPs) such as standard soil erosion and sediment control shall be implemented. These may include measures such as the following:

- Limiting the amount of surface area graded at any given time to reduce the area subject to potential erosion;
- Utilizing soil erosion protective materials such as mulch or geotextiles on areas where soils have a high potential for erosion until permanent provisions such as lawns and grasses can be developed;
- Planting vegetation as soon as grading operations permit to minimize the amount of time soils are exposed to possible erosion; and
- Building basins to collect sediment-laden water that might run off.

The project will be regulated through review and approval by the Hawai'i County Department of Public Works (DPW) to ensure compliance with standards related to storm runoff containment.

#### **3.1.4 Climate and Air Quality**

##### *Existing Environment*

The climate of the Ocean View area near State Hwy. 11 is mild and fairly dry due to its location at an elevation of nearly 2,000 feet on the leeward side of the transition from the windward to the leeward climate zone. Average annual rainfall in the area is about 40 inches, with a small but distinct summer maximum (UH-Hilo Geography 1998). Temperatures are generally mild (65 to 75° F.) and show definite but moderate seasonal variability. The northeast trades that dominate the eastern half of Ka'u are replaced in Ocean View by more light and variable winds, as the area



is affected by the diurnal upslope-downslope wind pattern of Kona. In sites with bare surfaces, winds in the area are strong enough to exacerbate dust problems. The site is within an air quality attainment area as defined by the State of Hawai'i Department of Health and the EPA.

#### *Impacts and Mitigation Measures*

The proposed project will not produce any permanent substantial air quality impacts. Construction has the potential to produce localized and temporary fugitive dust emissions. A dust control plan will be implemented for construction activities with potential to generate substantial dust. The elements of the plan may include some or all of the following:

- Watering of active work areas;
- Cleaning adjacent paved roads affected by construction;
- Covering of open-bodied trucks carrying soil or rock;
- Limiting area to be disturbed at any given time;
- Mulching or stabilizing disturbed inactive areas with geotextile; and
- Paving and landscaping as soon as practical in the construction schedule.

#### **3.1.5 Scenic Value and Noise**

##### *Existing Environment*

The Hawai'i County General Plan contains Goals, Policies and Standards intended to preserve areas of natural beauty and scenic vistas from encroachment. For Ka'u, the Plan refers to various views of Mauna Loa, the coastline, and certain historic lava flows. No views from or of this area of Kahuku are listed. The rocky, hummocky project sites currently support native scrub forest where they are not bulldozed (Figure 3-4).

Noise levels on preferred and alternate well/reservoir sites are moderate and are derived mainly from the vehicle traffic on adjacent roads, activities in the adjacent community park, and residences. Even though the fill site is adjacent to Highway 11, the current low volume of traffic and lack of other sources of noise also results in only moderate noise levels.

##### *Impacts and Mitigation Measures*

Both the well/reservoir and fill sites would be clearly visible from adjacent roads and properties. The reservoir will be 18 to 20 feet high and about 75 feet in diameter (see Figure 1-3 for photos of a typical reservoir and fill site. Although not as massive, the fill facility, along with the procession of water trucks and resident vehicles utilizing the site, will present visual impacts. To mitigate this, DWS will prepare and implement a professional landscaping plan designed to make the facilities more attractive as a whole and to obscure them from view to the extent practicable from adjacent residences.

Figure 3-4  
Photos of Preferred Well/Reservoir and Standpipe Sites



Proposed Well and Reservoir Site ▲ ▼ Proposed Standpipe/Spigot Site



Construction will elevate noise levels during short periods over the course of several months. The Department of Health (DOH) will be consulted, and if appropriate, the contractor will be required to obtain a permit per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction. DOH would review the proposed activity, location, equipment, project purpose, and timetable in order to decide upon conditions and mitigation measures, such as restriction of equipment type or hours, maintenance requirements, and portable noise barriers.

As far as permanent impacts, the well will be outfitted with a submersible pump, which would be located within the well, about 2,000 feet below the ground surface, and thus barely audible on the site. Minor noise will be produced by the reservoir occasional maintenance activities. The control building will also be equipped with chlorine-leak detection noise and sight alarms that will be connected to the Department of Water Supply's SCADA system but rarely, if ever, required to be used.

The fill site will be visited by the public during hours to be determined in consultation with neighbors and community groups. Regardless of hour restrictions, noise from water hauling trucks and users may affect adjacent residences. After the facility opens, DWS will evaluate the level of noise nuisance on the site and will work with adjacent residents to adjust facility hours to minimize noise nuisance to the extent compatible with effective community use of the facility. Landscaping will be installed to provide some noise reduction.

### **3.1.6 Hazardous Materials and Toxic Substances**

#### *Existing Environment*

A Phase I Environmental Site Assessment was conducted for the well/reservoir site (Appendix 3). This study, along with visual inspection of the fill site, indicates that no hazardous materials or toxic substances are present on the sites.

#### *Impacts and Mitigation Measures*

Water purification will involve disinfection with chlorine. Chlorine, a hazardous substance that is inventoried through a Tier-2 Reporting Form, will be stored in cylinders within a fire-rated enclosure in the control building. This information is filed with State and County Civil Defense Agencies and the County Fire Department. In order to ensure proper storage, use and monitoring of these substances, the project will be designed in accordance with DWS's most recent water system standards. The design will be coordinated with the appropriate County and State agencies.

Given the proper design and appropriate agency coordination, as well as the extensive safety precautions for use of chlorine, there will be negligible hazard to the public or the natural environment.

### 3.2 Biological Environment

#### *Existing Environment*

The preferred well/reservoir property, potential backup well site, the fill site, and the pipeline routes were surveyed for plants by botanist Layne Yoshida in February 2007. Plant species were identified in the field and, as necessary, keyed out in the lab. Special attention was given to the possible presence of any federally (USFWS 2007) listed endangered plant species known from the general area, such as halapepe (*Pleomele hawaiiensis*).

The vegetation of the entire area can best be classified as `Ohi`a Lowland Mesic Forest (Gagne and Cuddihy 1990). Vegetation throughout all properties consists of a scattered to open canopy, basically native forest dominated by `ohi`a trees (*Metrosideros polymorpha*) between 20 and 60 feet high. This forest varies between nearly bare `a`a patches with scattered `ohi`a to densely forested pockets with a somewhat diverse lower canopy and understory consisting of `a`ali`i (*Dodonea viscosa*), pukiawe (*Styphelia tameiameia*), (*Diospyros sandwicensis*), `ulei (*Osteomeles anthyllidifolia*), mamane (*Sophora chrysophylla*), and ala ala wai nui (*Plectranthus parviflorus*), along with a variety of native herbs and ferns. Non-native elements are particularly prominent in bulldozed areas and roadsides.

Botanists found a total of 25 endemic or indigenous Hawaiian plant species out of 95 plant species identified from the project area (Table 3-2). All native plants found are relatively common on the island and in the area.

No faunal surveys were conducted, as most animals found in the lower Ocean View area are alien species or fairly common native birds such as the Hawai`i `Amakihi (*Hemignathus virens virens*) and the Apapane (*Himatione sanguinea*). The endangered Hawaiian Hawk (*Buteo solitarius*) and Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) are often found in this area, as well as a variety of locations throughout the island of Hawai`i. It is unlikely, however, that either species would find the particular vegetation of the sites useful habitat for nesting/roosting.

No streams, ponds or wetlands are present in the region and none would be affected by the proposed project.

**Table 3-2  
Plant Species on Well/Reservoir and Fill Sites**

Scientific Name	Family	Common Name	Life Form	Status*
<i>Abutilon grandifolium</i>	Malvaceae	Hairy Abutilon	Herb	A
<i>Acacia koa</i>	Fabaceae	Koa	Tree	I
<i>Ageratina riparia</i>	Asteraceae	Hamakua Pamakani	Herb	A
<i>Ageratum conyzoides</i>	Asteraceae	Maile Honohono	Herb	A
<i>Araucaria columnaris</i>	Araucariaceae	Cook Island Pine	Tree	A
<i>Argemone glauca</i>	Papaveraceae	Pua Kala	Herb	I
<i>Asclepias physocarpa</i>	Asclepiadaceae	Balloon Plant	Shrub	A
<i>Bidens pilosa</i>	Asteraceae	Bidens	Herb	A
<i>Buddleia asiatica</i>	Buddleiaceae	Dog Tail	Shrub	A
<i>Bulbostylis capillaris</i>	Cyperaceae	Bulbostylis	Herb	A
<i>Chamaecrista nictitans</i>	Fabaceae	Partridge Pea	Herb	A
<i>Chamaesyce hirta</i>	Euphorbiaceae	Hairy Spurge	Herb	A
<i>Chamaesyce hypericifolia</i>	Euphorbiaceae	Graceful Spurge	Herb	A
<i>Chloris sp.</i>	Poaceae	Fingergrass	Herb	A
<i>Clusia rosea</i>	Clusiaceae	Autograph Tree	Tree	A
<i>Cocculus trilobus</i>	Menispermaceae	Huehue	Vine	I
<i>Commelinā diffusa</i>	Commelinaceae	Hono Hono	Herb	A
<i>Crotalaria sp.</i>	Fabaceae	Crotalaria	Herb	A
<i>Desmodium sandwicense</i>	Fabaceae	Spanish Clover	Herb	A
<i>Desmodium sp.</i>	Fabaceae	Desmodium	Herb	A
<i>Diospyros sandwicensis</i>	Ebenaceae	Lama	Tree	I
<i>Dodonea viscosa</i>	Sapindaceae	A`ali`i	Shrub	I
<i>Doryopteris decipiens</i>	Pteridaceae	Kumuniu	Fern	I
<i>Eleusine indica</i>	Poaceae	Wiregrass	Herb	A
<i>Emilia fosbergii</i>	Asteraceae	Flora's Paintbrush	Herb	A
<i>Epidendrum sp.</i>	Orchidaceae	Epidendrum	Herb	A
<i>Eragrostis sp.</i>	Poaceae	Love Grass	Herb	A
<i>Eucalyptus sp.</i>	Myrtaceae	Eucalyptus	Tree	A
<i>Euphorbia leucocephala</i>	Euphorbiaceae	Puno-puno	Shrub	A
<i>Euphorbia pulcherrima</i>	Euphorbiaceae	Poinsettia	Shrub	A
<i>Glycine wightii</i>	Fabaceae	Glycine	Vine	A
<i>Gnaphalium purpureum</i>	Asteraceae	Gnaphalium	Herb	A
<i>Grevillea robusta</i>	Proteaceae	Silver Oak	Tree	A
<i>Hedyotis corymbosa</i>	Rubiaceae	Hedyotis	Herb	A
<i>Hyptis pectinata</i>	Lamiaceae	Comb Hyptis	Shrub	A
<i>Indigofera sp.</i>	Fabaceae	Indigofera	Shrub	A
<i>Ipomoea indica</i>	Convolvulaceae	Morning Glory	Vine	I
<i>Kalanchoe pinnata</i>	Crassulaceae	Air Plant	Herb	A
<i>Kalanchoe tubiflora</i>	Crassulaceae	Kalanchoe	Herb	A
<i>Leonotis nepetifolia</i>	Lamiaceae	Lion's Ear	Shrub	A
<i>Lepisorus thunbergianus</i>	Polypodiaceae	Ekaha Akolea	Fern	I
<i>Leucaena leucocephala</i>	Fabaceae	Haole Koa	Tree	A
<i>Lycopersicon sp.</i>	Solanaceae	Tomato	Herb	A
<i>Macroptilium atropurpureum</i>	Fabaceae	Macroptilium	Herb	A
<i>Macroptilium lathyroides</i>	Fabaceae	Cow Pea	Herb	A

\* A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species

Table 3-2, continued

Scientific Name	Family	Common Name	Life Form	Status*
<i>Malvastrum coromandelianum</i>	Malvaceae	False Mallow	Herb	A
<i>Mariscus hillebrandii</i>	Cyperaceae	Cyperus	Herb	I
<i>Melinis minutiflora</i>	Poaceae	Molasses Grass	Herb	A
<i>Metrosideros polymorpha</i>	Myrtaceae	Ohia	Tree	I
<i>Mimosa pudica</i>	Fabaceae	Sleeping Grass	Herb	A
<i>Momordica charantia</i>	Cucurbitaceae	Bitter Melon	Vine	A
<i>Myoporum sandwicense</i>	Myoporaceae	Naio	Tree	I
<i>Nephrolepis multiflora</i>	Nephrolepidaceae	Sword Fern	Fern	A
<i>Nototrichium sandwicense</i>	Amaranthaceae	Kului	Shrub	I
<i>Opuntia sp.</i>	Cactaceae	Opuntia	Shrub	A
<i>Osteomeles anthyllidifolia</i>	Rosaceae	Ulei	Shrub	I
<i>Oxalis corniculata</i>	Oxalidaceae	Yellow Wood Sorrel	Herb	A
<i>Panicum maximum</i>	Poaceae	Guinea Grass	Herb	A
<i>Passiflora edulis</i>	Passifloraceae	Lilikoi	Vine	A
<i>Passiflora foetida</i>	Passifloraceae	Love-in-a-mist	Vine	A
<i>Pellaea ternifolia</i>	Pteridaceae	Laukahi	Fern	I
<i>Peperomia leptostachya</i>	Piperaceae	Peperomia	Herb	I
<i>Phlebodium aureum</i>	Polypodiaceae	Hare's Foot Fern	Fern	A
<i>Pinus sp.</i>	Pinaceae	Pine	Tree	A
<i>Pipturus albidus</i>	Urticaceae	Mamaki	Shrub	I
<i>Plectranthus parviflorus</i>	Lamiaceae	Plectranthus	Herb	I
<i>Plectranthus sp.</i>	Lamiaceae	Plectranthus	Herb	A
<i>Pluchea symphytifolia</i>	Asteraceae	Sourbush	Shrub	A
<i>Plumbago zeylanica</i>	Plumbaginaceae	Ilie'e	Shrub	I
<i>Plumeria sp.</i>	Apocynaceae	Plumeria	Shrub	A
<i>Polygonum capitatum</i>	Polygonaceae	Polygonum	Herb	A
<i>Portulaca oleracea</i>	Portulacaceae	Pig Weed	Herb	A
<i>Portulaca pilosa</i>	Portulacaceae	Akulikuli	Herb	A
<i>Psidium guajava</i>	Myrtaceae	Common Guava	Tree	A
<i>Psilotum nudum</i>	Psilotaceae	Moa	Fern Ally	I
<i>Psydrax odoratum</i>	Rubiaceae	Alahe'e	Tree	I
<i>Rhynchelytrum repens</i>	Poaceae	Natal Red Top	Herb	A
<i>Ricinus communis</i>	Euphorbiaceae	Castor Bean	Shrub	A
<i>Sansevieria sp.</i>	Agavaceae	Sansevieria	Herb	A
<i>Santalum paniculatum</i>	Santalaceae	Sandalwood	Tree	I
<i>Schefflera actinophylla</i>	Araliaceae	Octopus Tree	Tree	A
<i>Schinus terebinthifolius</i>	Anacardiaceae	Christmas Berry	Shrub	A
<i>Sida spinosa</i>	Malvaceae	Prickly Sida	Herb	A
<i>Solanum americanum</i>	Solanaceae	Popolo	Herb	I
<i>Sonchus oleraceus</i>	Asteraceae	Sow Thistle	Herb	A
<i>Sophora chrysophylla</i>	Fabaceae	Mamane	Tree	I
<i>Spermacoce sp.</i>	Rubiaceae	Buttonweed	Herb	A
<i>Stachytarpheta jamaicensis</i>	Verbenaceae	Jamaican Vervain	Herb	A
<i>Stryphelia tameiameia</i>	Epacridaceae	Pukiawe	Shrub	I
<i>Synedrella nodiflora</i>	Asteraceae	Nodeweed	Herb	A
<i>Tradescantia sp.</i>	Commelinaceae	Tradescantia	Herb	A

\* A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species



Table 3-2, continued

Scientific Name	Family	Common Name	Life Form	Status*
<i>Tridax procumbens</i>	Asteraceae	Coat Buttons	Herb	A
<i>Triumfetta semitriloba</i>	Tiliaceae	Sacramento Burr	Herb	A
<i>Waltheria indica</i>	Sterculiaceae	Uhaloa	Herb	I

\* A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species

A separate botanical study was conducted as part of investigations for a potential cell tower on TMK 9-2-197:01 (the USGS site) in 2002 (Terry and Hart 2002; see Appendix 5). The area was re-examined in June 2007. This site is also somewhat disturbed, and vegetation and habitat were similar; only two additional natives, one the common ilima (*Sida fallax*), were found at the USGS site. However, a lava tube channel at the back of the property contains the listed endangered tree halapepe (*Pleomele hawaiiensis*).

### *Impacts and Mitigation Measures*

As none are present at the fill site and preferred well/reservoir site, no impact upon rare, threatened or endangered plant species is expected. At the USGS site, the endangered halapepe trees require special consideration in site planning. The trees are found within a small ravine formed by a collapsed lava tube, which has probably restricted grazing by feral ungulates and allowed the plants to persist and propagate. Despite grading and construction of various projects on the USGS site, the trees are currently thriving under the care of the Hawaiian Ocean View Ranchos Road Maintenance Corporation, which has protected the isolated ravine from disturbance. The likely site for any future well would be near the road adjacent to the existing well, which has one of the few flat and graded areas (the reason the site was originally chosen). If the USGS site is selected, DWS should enclose a circle roughly 50 feet in diameter surrounding the trees with orange construction fencing and ensure that all construction and maintenance personnel are made aware of the location of the trees and the need to avoid any grading, dumping, disposal of liquid, or any other potentially harmful activity in the vicinity of the plants. With these precautions, it is unlikely that the project would cause any harm to the halapepe. DWS should also consult with the Hawai'i State Department of Land and Natural Resources, Division of Forestry and Wildlife, to inform the agency of the location of the trees and the plans for the well and to accept advice concerning their safekeeping.

Both hawks and bats may forage in the area, but neither would likely be impacted by any project activities, which would occur in areas dominated by low-stature vegetation surrounded by roads, residences and a park.

Given the expected 2,000 foot-plus depth of the well and the distance of at least five miles between the bottom of the hole and any potential subaerial outlet (i.e., shoreline springs or coastal waters), it is extremely unlikely that distant streams, ponds or wetlands would be affected in any way by either surface activities or aquifer pumping. Despite the high flux of fresh groundwater into the coastal waters of Hawai'i, steep bathymetry and rough seas induce almost

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instantaneous mixing of fresh and salt water. No effects on aquatic biology of coastal waters would be expected from the absence in this flux of the relatively minor quantity of fresh water that would be withdrawn by the well.

As stated in Section 1.2, the final alignment a portion of the transmission line has not yet been determined, but it is expected to involve portions of Keaka Parkway, Prince Kuhio Blvd, and a crossing of State Highway 11, as well as developed portions of TMKs 9-2-185:94, 95 and 96 (selection of the alternate USGS site would involve a different route yet to be determined). As these areas are fully developed for streets and urban uses, no impacts to biological resources would occur. If the final alignment of the transmission line involves undeveloped properties, additional biological assessment will occur.

### 3.3 Socioeconomic

#### 3.3.1 Land Use, Social Factors and Community Identity

##### *Existing Environment*

The Ocean View area is made up of a number of subdivisions. Almost 11,000 mostly 1-acre lots make up Hawaiian Ocean View Estates, about 1,230 1 to 3-acre lots are present in Hawaii Ocean View Ranchos, and Kona Garden Estates has about 240 3-acre lots. Since the subdivisions were created in the 1950s, Ocean View has experienced steady growth that has accelerated with the recent employment boom in Kona, which itself lacks affordable housing. Although it is a community in its own right, Ocean View also functions as a working class “bedroom community” for Kona, which has increased traffic and demand for services. Based on current economic, land use and regulatory trends, Kona will continue to have high job growth and almost no increase in affordable housing, and Ocean View will continue to grow.

Table 3-3 provides population and socioeconomic characteristics for both Hawai'i County and the Ocean View area, a region identified by the U.S. Census Bureau as a *Census Designated Place (CDP)*. It should be noted that Ocean View's population has grown considerably since 2000, with some estimates as high as 6,000. An exhaustive survey of housing in 2006 found 1,389 dwellings, which if multiplied by the average household size of 2.31 reported in the 2000 census would indicate a population of about 3,200, although this does not account for the vacancy rate, which in 2000 was reported to be about 30 percent. Whatever the current level, it is almost certain population will continue to rise.

In comparison to the island as a whole, the Ocean View area has more residents born outside the State, and an ethnic makeup that has a greater proportion of both whites and Hawaiians than the County as a whole. It has both fewer children and fewer elderly than the County average, and a substantially higher median age. Ocean View also has lower median incomes, fewer adults in the workforce, a greater proportion of residents living in poverty, and a greater proportion of adults



younger than 64 with a disability (Table 3-3). As this portrait is based on 2000 census data, today's community may be somewhat different.

The four Hawaiian Ocean View Estates properties directly involved (see Figure 1-2) are all privately-owned, vacant 1-acre lots in the State Land Use Agricultural District County Zoning is A-1a (Agricultural, minimum lot size 1 acre). The USGS site (Figure 1-1) within Hawaiian Ocean View Ranchos is zoned A-3a. All are designated on the County General Plan Land Use Designation Maps (LUPAG) as Extensive Agriculture Rural, along with most of the transmission line route, which also crosses land designated as Urban Expansion. The site is not within the Special Management Area. The proposed uses are allowed under these designations.

*Impacts and Mitigation Measures*

The project would not cause relocation of residences, businesses, community facilities, farms or other activities. In the long term, all project impacts to the social environment may be regarded as beneficial, because the project would improve the quality, quantity, and reliability of potable water for residences and businesses. All water projects require consideration for the secondary effects of growth induction; this topic is covered in Section 3.4.

**Table 3-3  
Selected Socioeconomic Characteristics**

CHARACTERISTIC	Hawai'i Island	Ocean View
Total Population	148,677	2,178
Percent White	31.5	56.7
Percent Asian	26.7	6.3
Percent Hawaiian	9.7	11.0
Percent Two or More Races	28.4	21.8
Median Age (Years)	38.6	43.1
Percent Under 18 Years	26.1	24.6
Percent Over 65 Years	13.5	12.8
Percent Households with Children	37.5	25.0
Average Household Size	2.75	2.31
Percent Graduated High School	84.6	87.2
Percent 19 to 64 Years with Disability	19.2	23.0
Percent Born in State of Hawai'i	63.3	41.7
Percent Housing Vacant	15.5	31.9
Percent Over Age 16 in Labor Force	61.7	49.8
Median Household Income	\$39,805	\$26,125
Percent Below Poverty Level	15.7	25.2

Source: U.S. Bureau of the Census. May 2001. *Profiles of General Demographic Characteristics, 2000 Census of Population and Housing, Hawai'i.* (U.S. Census Bureau Web Page).

### 3.3.2 Public Services, Facilities and Utilities

#### *Utilities*

Both the fill site and the preferred and alternate well/reservoir facilities will require electrical power. This will be provided via existing overhead lines and existing or new poles and transformers. Power demands will be minor, and no adverse affect to the utility will occur.

#### *Roadways*

Access to all sites will be via the existing private roads within Ocean View subdivisions. These private roadways, owned by area residents, are maintained by community association road maintenance corporations through annual road maintenance fees. No access directly to Highway 11 will be required from the fill site.

Relatively few trips will be necessary for maintenance of the facilities. As there is considerable need for the fill site by both water-hauling trucks and the general public, this facility may sometimes have substantial traffic during its operational hours. No traffic estimates have been developed. Based on observed use at a similar facility on Highway 130 near Pahoia in Puna, no major traffic impacts are expected. DWS will monitor use of the facility to determine if a traffic study is necessary and whether traffic mitigation measures such as caution signs or turning lanes will be required. Because the access road to the fill site is very near Highway 11 on Lehua Lane, little additional impact to Hawaiian Ocean View Estates roads, particularly by non-residents of the subdivision, is expected.

#### *Police, Fire, Other Public Facilities and Services*

Police and fire stations are present in Na`alehu, and a volunteer fire station with tanks for filling up fire tankers is located several miles away on Orchid Circle Mauka in Hawaiian Ocean View Estates. These facilities would not be affected in any adverse way. The project may benefit the fire-fighting capabilities of Ocean View by providing an additional site to provide water for fire tankers.

Kahuku Park is located adjacent to the preferred well/reservoir site. This water facility would not adversely affect the park, and there may be opportunities to provide water service.

The project would not affect any other public facilities or services, including recreational, educational, solid waste and other in any adverse way.

### 3.3.3 Cultural and Historic Resources

#### *Cultural Background and Resources*

The traditional cultural value of the well/reservoir pad and fill sites was assessed by determining whether it supports any traditional gathering uses, is vital for access to traditional cultural sites, or has other important symbolic associations for native Hawaiians or other cultural groups.

Despite its rough and forbidding appearance, ethnographic and early historic accounts clearly indicate that Kahuku was once an active and settled area. Its coastline was noted as a fine fishing ground and even attracted Kamehameha I (Silva 1987:D-4). Fishermen and their families once have inhabited the coastal region in significant numbers.

Inland and upslope areas were utilized for dispersed dry-land agriculture and habitation. Planting or clearing mounds, trails, house platforms, *ahu* and walls are present in places. The far upland areas of Kahuku were apparently not inhabited on a permanent basis. Hawaiians born in the early 1800s report that upland areas were used for bird hunting, wood procurement (sandalwood and *koa*), goat hunting, and gathering fern *pulu* (Silva 1987).

Following the *Māhele*, Kahuku Ahupua'a was awarded to W. P. Leleiohoku [LCAw. 9971]. His holdings passed to Ruth Ke'elikolani and thence to Pauahi Bishop. There were a few *kuleana* Land Commission Awards within Kahuku near the coast and near the *ala loa*. No individual awards were made in this part of Ocean View. During the late nineteenth century improvements to the *ala loa* were undertaken to establish a good road from Kona to Ka'ū. Portions of this old road parallel the current Māmalahoa Highway and consist of both single and two-track paths and improved graveled/cindered roadways.

As part of the early consultation process, the Honolulu and West Hawai'i offices of the Office of Hawaiian Affairs and a number of residents and community associations were contacted about the project. None of these entities identified any natural, cultural or historical resources of concern in the well/reservoir and fill sites or in adjacent areas. Documentary and archaeological surveys (see below) revealed no evidence of structures, unique natural features or activities that would be valuable for gathering, ceremonial, or access purposes, probably because of its very isolated location and limited resources.

#### *Cultural Resources: Impacts and Mitigation Measures*

It is reasonable to conclude that based upon the apparent lack of resources and uses, the exercise of native Hawaiian rights related to gathering, access or other customary activities will not be affected, and there will be no adverse effect upon cultural practices or beliefs.

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*Historic Resources: Existing Environment*

An archaeological assessment of the project site was conducted by Rechtman Consulting. The survey is contained in full in Appendix 4 and is summarized below.

Archaeological research in Kahuku ahupua'a has been most intensive on the coast, particularly Pohue Bay. The earliest work conducted at Pohue Bay was conducted under the aegis of the Bernice Pauahi Bishop Museum, which retains field notes. A number of sites were identified at Pohue Bay, including walled house sites, burial platforms, cave shelters, trails, anchialine ponds, and petroglyphs. Cox also reports on several hundred petroglyphs in the Pohue Bay area (Cox and Stasack 1970:80, 82). In 1965, L. Soehren excavated at two cave-shelters southeast of Pohue Bay at Kahakahakea, one of which produced a radiocarbon date ranging from the 1,300s to the 1,400s (Soehren 1966). A large-scale archaeological reconnaissance survey conducted at Pohue Bay in 1987 confirmed the relatively intensive use of the coastal region (Haun and Walker 1987). A variety of site types were identified including C, U and L shaped walls, enclosures, platforms, terraces, cairns, linear and curved walls, petroglyphs, lava tubes and blisters, mound alignments, *pāhoehoe* excavations, anchialine ponds, overhangs, and other modified areas.

Work in upland areas of Kahuku has been much more infrequent and more recent; Rechtman Consulting, LLC conducted two small surveys (Rechtman 2000; 2002). In April 2000, a portion of a one-acre parcel at the upper limits of Hawaiian Ocean View Estates Subdivision was surveyed. The parcel was situated on a 1907 flow and produced no cultural remains. Later, in January 2002, a 2.5-acre parcel along Kohala Blvd. was surveyed. A lava tube discovered on the property contained only modern era items were found. No other cultural remains were recorded during that study. Rechtman Consulting, LLC also conducted an archaeological and limited cultural assessment (Desilets and Rechtman 2004) for a 66.5-acre project area located just *makai* of Highway 11, roughly 3.5 kilometers to the northwest of the current study area. That study (*ibid.*) resulted in negative findings with respect to archaeological resources and the exercise of traditional and customary practices.

Based on the results of previous work in the area, as summarized above, a set of archaeological expectations for the general project area can be formulated. Given that historical accounts indicate dispersed habitation with associated agriculture, remnant surface features may include house platforms, burial areas, and agricultural features such as mounds and walls. Native informants testifying before the Boundary Commission in the nineteenth century also spoke of roads and trails, one of which was used for hauling tree trunks to the coast for use in canoe manufacture (Silva 1987:D-5). Lava tubes are also present in the general project area. These geologic features are often important loci of traditional Hawaiian activity including temporary habitation and burial.

On April 2, 2007, Matthew R. Clark, B.A. and Robert B. Rechtman, Ph.D. conducted a field inspection of the well/reservoir property, potential backup well site, fill site, and transmission

line routes. The property boundaries were clearly evident and the vegetation cover was minimal. As mentioned above, much of the study area has been mechanically altered and the roadway portions have been previously developed. There were no archaeological resources observed on the surface of any of the properties involved and the likelihood of subsurface resources is extremely remote given the extensive grading and exposed bedrock.

A separate assessment conducted on TMK 9-2-197:01 (the USGS site) in 2002 (see Appendix 5) concluded that no historic properties were present, but the report was never submitted to SHPD.

#### *Historic Resources: Impacts and Mitigation Measures*

For the main properties involved, the archaeologist requested a written determination from the State Historic Preservation Division (SHPD) of “no historic properties affected” in accordance with HAR 13§13-284-5(b)1. SHPD has failed to respond to the requested review. If the USGS site is considered for use as a well, the archaeological assessment would also be submitted to SHPD for evaluation to assist in confirmation of no adverse impact to historic sites.

In the unlikely event that archaeological resources, Hawaiian cultural sites or human remains are encountered during future development activities within the project site, work in the immediate area of the discovery should be halted and DLNR-SHPD contacted as outlined in Hawai‘i Administrative Rules 13§13-275-12.

As stated in Section 1.2, the final alignment a portion of the transmission line has not yet been determined, but it is expected to involve portions of Keaka Parkway, Prince Kuhio Blvd, and a crossing of State Hwy. 11, as well as developed portions of TMKs 9-2-185:94, 95 and 96 (the alternate USGS site would require use of Paradise Parkway and a different crossing of State Hwy. 11). As these areas are fully developed for streets and urban uses, no impacts to archaeological resources would occur. If the final alignment of the transmission line involves undeveloped properties, additional archaeological assessment will occur.

### **3.3.4 Agricultural Land**

#### *Existing Environment, Impacts and Mitigation*

Consultation of maps of important farmland from the U.S. Natural Resources Conservation Service (USNRCS) (as displayed in the Hawai‘i State Geographic Information System) determined that none of the sites are classified as important agricultural lands in *Agricultural Lands of Importance to the State of Hawai‘i* (ALISH) map series. No farming is occurring on or adjacent to the well/reservoir pad or fill sites. No adverse impacts to farmland or farming would occur.

### 3.4 Growth-Inducing, Cumulative and Secondary Impacts

#### *Growth-Inducing Impacts*

Analysis of growth-inducing impacts examines the potential for a project to induce unplanned development, substantially accelerate planned development, encourage shifts in growth from other areas in the region, or intensify growth beyond the levels anticipated and planned for without the project. Provision of needed infrastructure such as roads, water supply, sewer facilities, etc., is often seen as growth-inducing. Of key importance is whether infrastructure fulfills existing demands/needs of planned growth, or whether it instead enables unplanned growth and/or diverts growth away from planned areas.

It is recognized that growth in Ocean View is a controversial and complex issue. In the words of the *Ka`u to South Kona Water Master Plan* in 2003 (Hawai`i County Office of the Mayor 2004: p. 1-20):

“Over 12,000 subdivided lots in Ocean View have the potential to accommodate regional growth without rezoning. This means that growth can occur within existing County General Plan land use and zoning designations. The existing population in the region needs water and other basic services. Developing water infrastructure for residential and agricultural use will certainly promote growth. The project area has grown quickly even without County water systems. Most in the community agree that growth will happen with or without a water system. Deferral of water source development should not be used as a method of controlling population. The challenge is in preserving the desired rural landscape and lifestyle even if a water supply is developed. The potential for growth is complicated because much of the area is within lava hazard zone 2. Should basic infrastructure be financed and developed in a hazardous area? A water system may encourage growth in a lava hazard area that is susceptible to property loss and economic devastation. This risk should be balanced with the need to provide basic services for residents.”

The proposed provision of potable water in Ocean View for distribution at standpipes and spigots, along with water lines to the commercial centers for fire protection, is in response to existing needs of the growing region and is not intended to foster growth. Water from these facilities may eventually be available for planned growth (i.e., as expressed in the Hawai`i County General Plan) within commercial areas of Ocean View. Municipal domestic water would help achieve this planned growth, but the lack of it heretofore has clearly not constrained growth.

#### *Cumulative Impacts*

Cumulative impacts result when implementation of several projects that individually have minor impacts combine to produce more severe impacts or conflicts among mitigation measures.

All adverse impacts of the current project related to most categories of effect, including hydrology, native species/habitat, water quality, erosion, historic sites, and other areas of concern, are either non-existent or extremely restricted in geographic scale, negligible, and capable of mitigation through proper enforcement of permit conditions. The aquifer is not a Groundwater Management Area and no adverse cumulative impacts related to the sustainable yield of the aquifer would occur. There are thus no appreciable adverse impacts that might accumulate with those of other past, present and future actions to produce more severe impacts.

*Secondary Impacts*

Construction projects may induce secondary physical and social impacts that are only indirectly related to a project. For example, construction of a new recreation facility can lead to changes in traffic patterns that produce impacts to noise and air quality for a previously unimpacted neighborhood. In this case, with the potential exception of certain traffic impacts, the proposed project's impacts are limited to direct impacts at the quarter-acre site itself, and there does not appear to be any potential for secondary impacts. DWS will monitor traffic at the fill site to determine whether offsite signage or road improvements will be necessary to mitigate for the increased traffic that the facility will involve.

**3.5 Required Permits and Approvals**

Several permits and approvals would be required to implement this project. They are listed here under their granting agencies. Not all listed permits may be required.

*Hawai'i State Commission on Water Resources*

- Well Construction Permit
- Pump Installation Permit

*Hawai'i State Department of Health*

- Approval of Preliminary Engineering Report
- National Pollutant Discharge Elimination System (NPDES) Permits
- Underground Injection Control (UIC) permit
- Community Noise Control Permit

*Hawai'i State Historic Preservation Division*

- Chapter 6e (Historic Sites) Concurrence with No Historic Properties Affected

*Hawai'i State Department of Transportation*

- Approval to Work Within State Right-of-Way, Easements

*Hawai'i Planning Department*

- Plan Approval

*Hawai'i County Department of Public Works*

- Grubbing and Grading Permits
- Building Permit





## 4 COMMENTS AND COORDINATION

### 4.1 Agencies and Organizations Contacted

The following agencies, organizations or individuals received a letter, e-mail or phone call inviting their participation in the preparation of the Environmental Assessment.

- Hawai`i State DLNR Land Division
- Hawai`i State DLNR Commission on Water Resource Management
- Hawai`i State DLNR State Historic Preservation Division
- Office of Hawaiian Affairs, Honolulu Office
- Office of Hawaiian Affairs, West Hawai`i Office
- Hawaii State Department of Transportation Hawai`i District Highways
- Hawai`i State Dept. of Health Environmental Planning Office
- Hawai`i County Department of Public Works
- Hawai`i County Parks and Recreation Department
- Hawai`i County Planning Department.
- Sierra Club
- Ocean View Community Association
- Ocean View Chamber of Commerce
- Various Neighbors and Residents

Copies of correspondence from parties with substantive comments during the preparation of the EA are included in Appendix 2A and are cited in appropriate sections of the text of this EA. It should be noted that the early consultation letter for the project included the original well and reservoir site at TMK 9-2-101:32, instead of the adjacent site that is actually being advanced in this EA, TMK 9-2-101:37. As no substantial difference exists between the two adjacent sites, additional consultation was not required or undertaken. Appendix 2b contains the notes from a public meeting held on May 23, 2007, along with written comments on the Draft EA and the responses to these comments. In general, comments have been highly supportive of the project. Various places in the EA have been modified to reflect input received at the meeting or in the comment letters; additional or modified text is denoted by double underlines, as in this paragraph.



## **5 LIST OF DOCUMENT PREPARERS**

This Environmental Assessment was prepared for the County of Hawai'i, Department of Water Supply by Ron Terry, Ph.D., of Geometrician Associates, with assistance from SSFM International Inc., the engineering contractor for the well project, archaeologists Rechtman Consulting LLC, and hazardous material specialists DR Associates.



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## 6 STATE OF HAWAII ENVIRONMENTAL ASSESSMENT FINDINGS

Section 11-200-12 of the State Administrative Rules sets forth the criteria by which the significance of environmental impacts shall be evaluated. The following discussion paraphrases these criteria individually and evaluates the project's relation to each.

1. *The project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.* The well/reservoir pad and fill sites support a native scrub forest, but no threatened or endangered species or rare ecosystems would be destroyed. The State Historic Preservation Division is expected to concur with the determination that no effect to historic properties will occur.
2. *The project will not curtail the range of beneficial uses of the environment.* No future beneficial use of the environment will be affected in any way by the proposed project. Sufficient water will remain, well within the sustainable yield of the aquifer, to promote other beneficial uses of groundwater in the Ocean View region and other areas.
3. *The project will not conflict with the State's long-term environmental policies.* The State's long term environmental policies are set forth in Chapter 344, HRS. The broad goals of this policy are to conserve natural resources and enhance the quality of life. A number of specific guidelines support these goals. No aspect of the proposed project conflicts with these guidelines. The project's goals of providing potable water to support adequate supply and orderly development of planned growth while conserving natural resources satisfies the State's environmental policies.
4. *The project will not substantially affect the economic or social welfare of the community or State.* The improvements will benefit the social and economic welfare of Hawai'i by providing a source of potable water for Ocean View.
5. *The project does not substantially affect public health in any detrimental way.* No adverse effects to public health are anticipated. Public health will be benefited by provision of potable water.
6. *The project will not involve substantial secondary impacts, such as population changes or effects on public facilities.* No adverse secondary effects are expected. The project will not enable development, but will instead answer a basic need for residents to have a source of potable water.
7. *The project will not involve a substantial degradation of environmental quality.* The implementation of best management practices for all construction will ensure that the project will not degrade environmental quality in any substantial way.

8. *The project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.* No endangered species of flora or fauna are known to exist on the project site or would be affected in any way by the project.
9. *The project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions.* Cumulative impacts result when implementation of several projects that individually have minor impacts combine to produce more severe impacts or conflicts among mitigation measures. All adverse impacts, including to the sustainable yield of the aquifer, will either not occur or will be reduced to negligible levels through mitigation measures, and will therefore not tend to accumulate in relation to this or other projects.
10. *The project will not detrimentally affect air or water quality or ambient noise levels.* The project will have negligible effects in terms of water quality, air quality and noise.
11. *The project will not affect or will likely be damaged as a result of being located within an environmentally sensitive area such as flood plains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters.* No floodplains, tsunami zones, or other such sensitive land is involved in the area planned for development. On balance, the County believes that it is economically and environmentally sensible to provide potable water closer to the community that needs it, despite the risk of lava inundation.
12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.* No protected viewplanes will be impacted by the project, which will have no adverse scenic effects, given implementation of a landscaping plan to screen the facilities from neighboring residences.
13. *The project will not require substantial energy consumption.* Some, but not substantial, input of energy is required for the construction of the facilities and the operation of the pump.

For the reasons above, the County of Hawai`i, Department of Water Supply has determined that the proposed project will not have any significant effect in the context of Chapter 343, Hawai`i Revised Statutes and section 11-200-12 of the State Administrative Rules, and has issued a Finding of No Significant Impact (FONSI), meaning that an Environmental Impact Statement is not required to be prepared.

## REFERENCES

- Cox, J., and E. Stasack. 1970. *Hawaiian Petroglyphs*. B. P. Bishop Museum Special Publication No. 60. B. P. Bishop Museum, Honolulu.
- Cuddihy, L. W., and C. P. Stone. 1990. *Alteration of Native Hawaiian Vegetation, Effects of Humans, their Activities and Introductions*. University of Hawai'i Cooperative National Park Resources Studies Unit, Honolulu.
- Desilets, M., and R. Rechtman. 2004. *Archaeological and Limited Cultural Assessment for a Proposed Solid Waste Transfer Station and Recycle Center (TMK: 3-9-2-156:002, 003, 043), Kahuku Ahupua'a, Ka'u District, Island of Hawai'i*. Rechtman Consulting LLC report RC-0197. Prepared for Ron Terry, Ph. D., Kea'au.
- Haun A., and A. Walker. 1987. *Archaeological Reconnaissance Survey, Hawaiian Riviera Resort Project Area, Land of Kahuku, Ka'u District, Island of Hawaii*. PHRI Report 308-060487. Prepared for Palace Development Corporation and Hawaii Ka'u Aina Partnership.
- Hawai'i County Department of Water Supply (DWS). 1989. *Hawai'i County Water Use and Development Plan*. Prep. for DWS and Hawai'i State Commission on Water Resources Management by Megumi Kon, Inc., Hilo.
- Hawai'i County DWS. 1991. *Hawai'i County Water Use and Development Plan, Plan Review Draft*. Prep. for DWS and Hawai'i State Commission on Water Resources Management by Megumi Kon, Inc., Hilo.
- Hawai'i County Planning Department. 2005. *The General Plan, County of Hawai'i*. Hilo. <http://www.hawaii-county.com/la/gp/toc.html>
- Hawai'i State Commission on Water Resources Management (CWRM). 1980. *State Water Resources Development Plan*. Honolulu.
- \_\_\_\_\_. 1990. *Draft Hawai'i Stream Assessment: A Preliminary Appraisal of Hawai'i's Stream Resources*. Prep. for CWRM by Hawai'i Cooperative Park Service Unit. Honolulu: National Park Service.
- \_\_\_\_\_. 1992. *Water Resources Protection Plan*. Prep. for CWRM by George A.L. Yuen & Associates. Honolulu.
- \_\_\_\_\_. 2003. *State Water Projects, Hawai'i Water Plan*. Vol. 2, SWPP for Island of Hawai'i. Prep. By Fukunaga and Associates, Inc., for CWRM.

Hawai'i State Department of Business, Economic Development and Tourism (DBEDT). 1997. *Hawai'i State Data Book*. Honolulu: DBEDT

Hawai'i State DHHL. 2002. *Hawai'i Island Plan: Final Report*. Prep. By PBR Hawaii, Inc. Honolulu.

Heliker, C. 1990. *Volcanic and Seismic Hazards on the Island of Hawaii*. Washington: U.S. GPO.

Macdonald, G.A., A.T. Abbott, and F.L. Peterson. 1986. *Volcanoes in the Sea: The Geology of Hawai'i*. 2nd ed. Honolulu: University of Hawai'i Press.

Pukui, M.K., Elbert, S.H., and E.T. Mookini. 1974. *Place Names of Hawaii*. 2<sup>nd</sup> ed.. Honolulu: University of Hawai'i Press.

Rechtman, R. 2000. *Archaeological survey of a portion of a parcel at the upper limits of Hawaiian Ocean View Estates (HOVE) Subdivision (TMK:3-9-2-149:052), Kahuku Ahupua'a, Ka'u District, Island of Hawai'i*. Rechtman Consulting letter report RC-0002 (HOVE). Prepared for Roy A. Vitousek, Kailua-Kona, Hawai'i.

\_\_\_\_\_. 2002. *Archaeological Investigation of a Roughly 2.5 Acre Parcel along Kohala Blvd in the Hawaiian Ranchos Subdivision (TMK:3-9-2-197:001), Kahuku Ahupua'a, Ka'u District, Island of Hawai'i*. Rechtman Consulting letter report RC-0107. Prepared for William Keoni Fox, American Tower Corporation, Honolulu, Hawai'i.

Sato, H.H. et al. 1973. *Soil Survey of Island of Hawaii, State of Hawaii*. Washington: U.S.D.A. Soil Conservation Service.

Silva, C. 1987. "Appendix D: Historical Documentary Research." IN Haun and Walker 1987:D-1-18.

Soehren, L. 1966. "Hawaii Excavations: 1965". Typed manuscript, B.P. Bishop Museum, Honolulu.

U.S. Bureau of the Census. 2002. U.S. Census of Population, 2000. American Fact Finder web page (<http://factfinder/census.gov>)

U.S. Fish and Wildlife Service (USFWS). 2007. *USFWS Threatened and Endangered Species System (TESS)*. Washington: GPO. [http://ecos.fws.gov/tess\\_public/StartTESS.do](http://ecos.fws.gov/tess_public/StartTESS.do).

University of Hawai'i at Hilo, Dept. of Geography. 1998. *Atlas of Hawai'i*. 3rd ed. Honolulu: University of Hawai'i Press.



**OCEAN VIEW DOMESTIC WATER WELL,  
RESERVOIR, TRANSMISSION AND  
STANDPIPE/SPIGOT FACILITIES  
KA`U, ISLAND OF HAWAII  
STATE OF HAWAII**

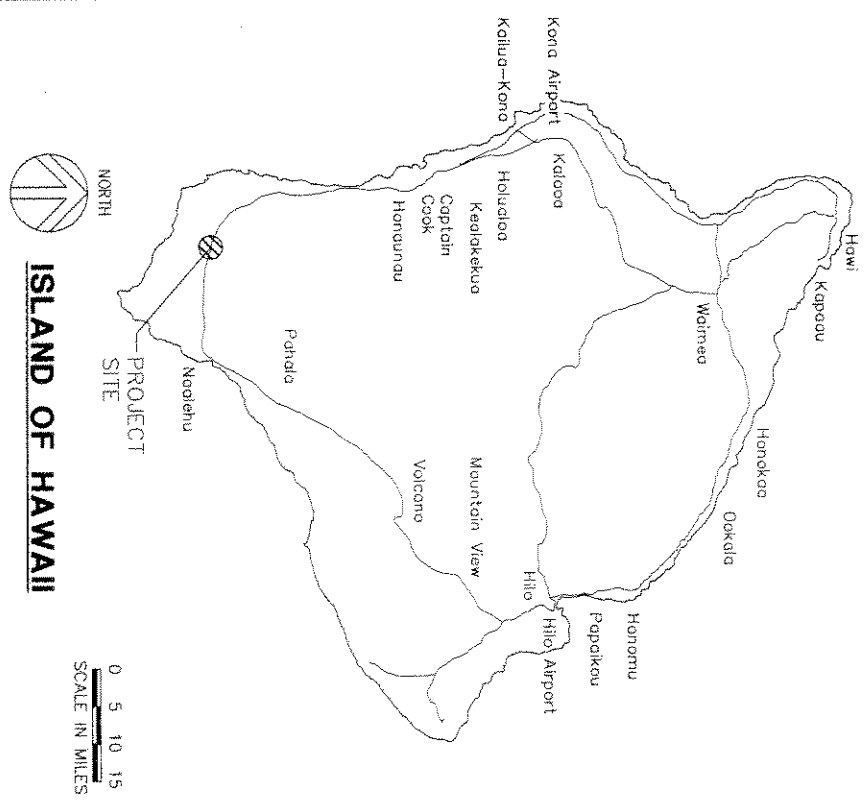
**ENVIRONMENTAL ASSESSMENT**

**APPENDIX 1**

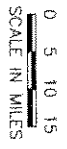
**SITE PLANS AND TECHNICAL FIGURES**



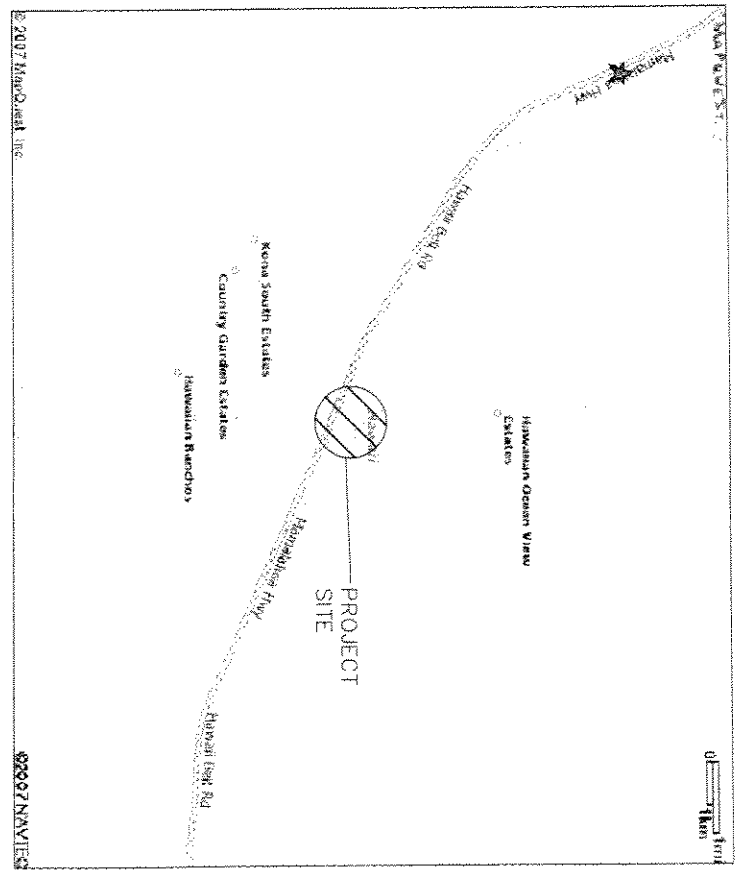
LOCATION MAP



ISLAND OF HAWAII



VICINITY MAP



<p>SSM International, Inc. 2000 Kapaemahu Hwy, Suite 200 Honolulu, Hawaii 96815</p>	<p>DATE: _____</p> <p>SCALE: 1:50,000</p>
	<p>PROJECT: HOVE Well Development - Phase 1</p>
<p>CLIENT: _____</p>	<p>DESIGNER: _____</p>
<p>DATE: _____</p>	<p>SCALE: _____</p>
<p>PROJECT: _____</p>	<p>DESIGNER: _____</p>
<p>CLIENT: _____</p>	<p>DATE: _____</p>



NO.	DESCRIPTION	DATE	BY	CHECKED

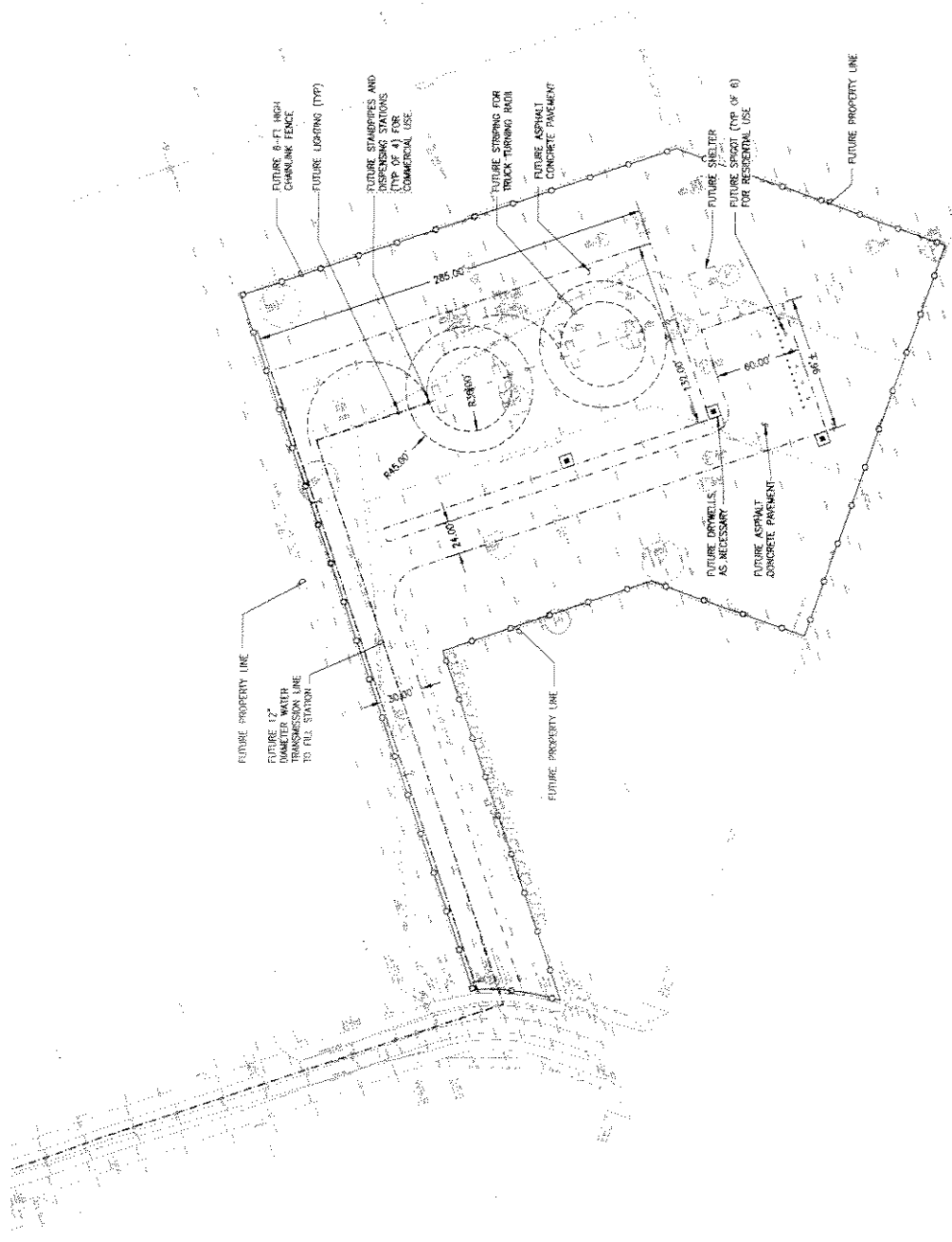
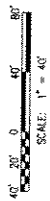
Hawaiian  
Oceanview  
Estate - Well  
Development  
(Phase 1)

OCEANVIEW HAWAII  
INC.

FILL  
STATION  
SITE PLAN

APPROVED BY:

DATE	
SCALE	
PROJECT NO.	
SHEET NO.	



FUTURE 12" DIAMETER WATER TRANSMISSION LINE TO FILL STATION

FUTURE LANDSCAPING (TYP)

FUTURE STRIPES AND SIGNAGE FOR TRUCK TURNING BASIN (TYP OF 4) FOR COMMERCIAL USE

FUTURE STRIPES FOR TRUCK TURNING BASIN

FUTURE ASPHALT CONCRETE PAVEMENT

FUTURE SHELTER

FUTURE SPEED BUMP FOR RESIDENTIAL USE

FUTURE DRYWELLS AS NECESSARY

FUTURE ASPHALT CONCRETE PAVEMENT

FUTURE PROPERTY LINE

FUTURE PROPERTY LINE

FUTURE PROPERTY LINE



NO.	REVISION	DATE	BY	CHECKED

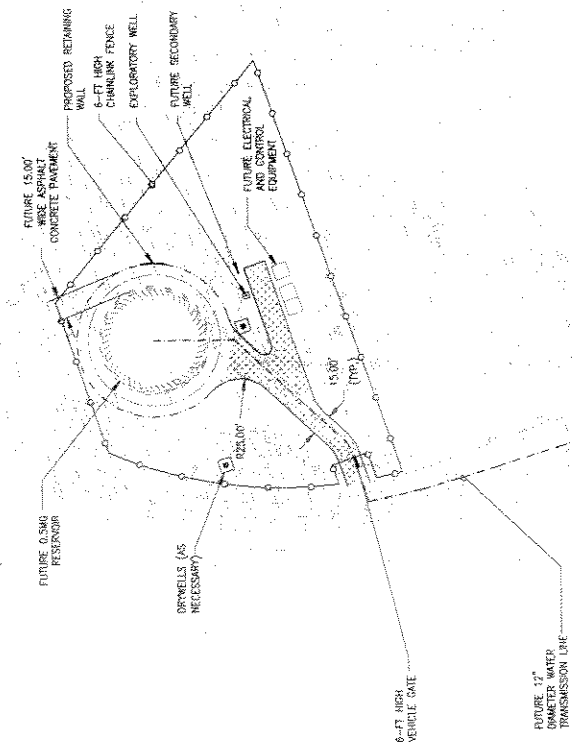
Hawaiian  
Oceanview  
Estate - Well  
Development  
(Phase 1)

OCEANVIEW HAWAII  
DATE: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_

WELL SITE  
PLAN

APPROVED BY: \_\_\_\_\_

DATE: _____	DRAWING NO. <b>C-2</b>
PROJECT NO. _____	SHEET NO. _____ OF _____



FUTURE 17" WATER TRANSMISSION LINE

6-FT HIGH VEHICLE GATE

ORWELLS (AS NECESSARY)

FUTURE 0.5MG RESERVOIR

FUTURE 15,000 WIRE MESH CONCRETE PAVEMENT

PROPOSED RETAINING WALL

6-FT HIGH CHAINLINK FENCE

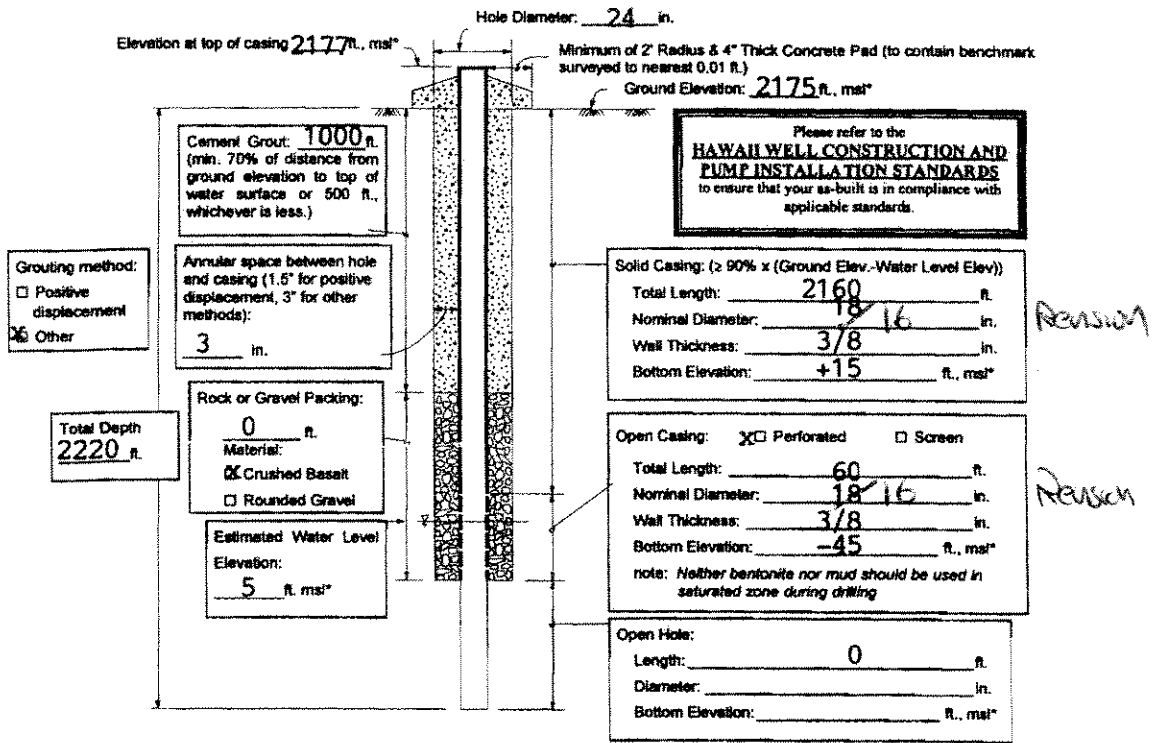
EXPLORATORY WELL

FUTURE SECONDARY WELL

FUTURE ELECTRICAL AND CONTROL EQUIPMENT

15,800 LPS

**PROPOSED WELL SECTION** (Please attach schematic if different from diagram provided below)



\* The approximate elevation must be referenced to mean sea level (msl) at the time of application filing. Final elevations of well components shall be submitted in the Well Completion/Well Abandonment reports and referenced to a benchmark which has been established by a surveyor licensed by the State.

For non-salt water Basal Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,

$$\text{Bottom Elevation of Well Limit} = \left( \text{Water Elevation} - \frac{41 \times \text{Water Level Elevation}}{4} \right)$$

Example: Estimated +2 ft. Water Level Elev. → Bottom Elevation of Well Limit =  $(2 - \frac{41 \times (2)}{4}) = -18.5$  ft.

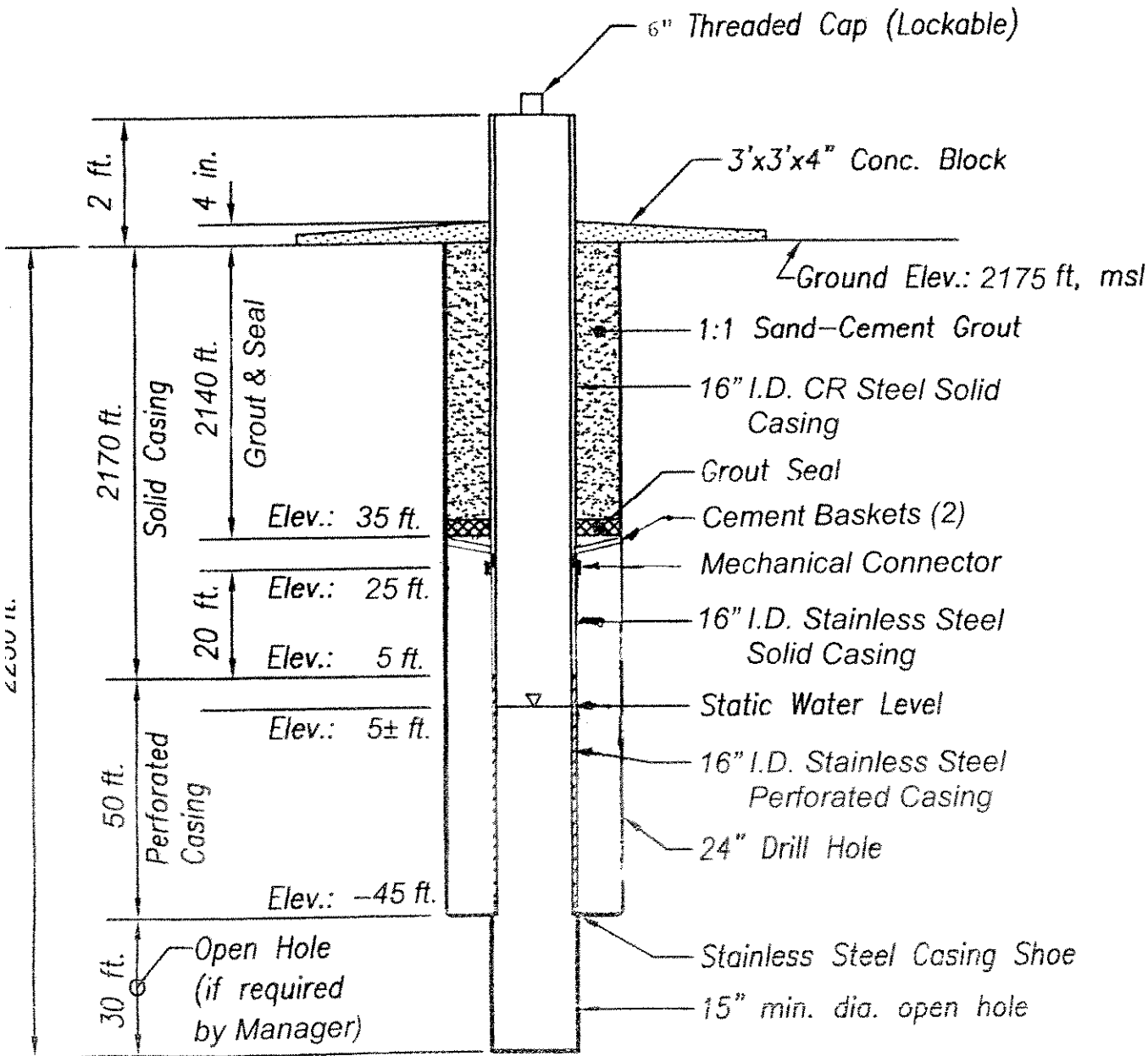
**Solid Casing Material:**

- Carbon Steel: compliant with (check one or more):  ANSI/AWWA C200  API Spec. 5L  ASTM A53  ASTM A139  
 And compliant with (check one or more):  ASTM A242 (or A806)  Type E  Type S  Grade B  Other
- Stainless Steel: (check one):  ASTM A409 (production wells)  ASTM A312 (monitor wells)
- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)  Schedule 40  Schedule 80
- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):  Schedule 40  Schedule 80  Schedule 120
- Thermoset Plastic: (check one)  Filament Wound Resin Pipe conforming to ASTM D2996  
 Centrifugally Cast Resin Pipe conforming to ASTM D2997  
 Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517  
 Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950  
 PTFE Fluorocarbon Tubing conforming to ASTM D3296  
 FEP Fluorocarbon Tubing conforming to ASTM D3296

**Open Casing Material:**

- Carbon Steel: compliant with (check one or more):  ANSI/AWWA C200  API Spec. 5L  ASTM A53  ASTM A139  
 And compliant with (check one or more):  ASTM A242 (or A806)  Type E  Type S  Grade B  Other
- Stainless Steel: (check one):  ASTM A409 (production wells)  ASTM A312 (monitor wells)
- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)  Schedule 40  Schedule 80
- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):  Schedule 40  Schedule 80  Schedule 120
- Thermoset Plastic: (check one)  Filament Wound Resin Pipe conforming to ASTM D2996  
 Centrifugally Cast Resin Pipe conforming to ASTM D2997  
 Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517  
 Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950  
 PTFE Fluorocarbon Tubing conforming to ASTM D3296  
 FEP Fluorocarbon Tubing conforming to ASTM D3296

# HOVE EXPLORATORY WELL



WELL DETAIL  
NOT TO SCALE





**OCEAN VIEW DOMESTIC WATER WELL,  
RESERVOIR, TRANSMISSION AND  
STANDPIPE/SPIGOT FACILITIES  
KA`U, ISLAND OF HAWAII  
STATE OF HAWAII**

**ENVIRONMENTAL ASSESSMENT**

**APPENDIX 2**

**AGENCY COORDINATION LETTERS**

**AND PUBLIC INVOLVEMENT**

Part A: Comments in Response to Pre-Consultation



11/23/2004

RE: The Mayor's Ocean View Water Development Advisory Committee

To the Honorable Mayor Kim,

First of all, we thank you for your interest and assistance towards obtaining a more local source of water for the Ocean View area.

Our Committee has come together at the suggestion of Senator Kokubun, Representative Herkes and yourself. This Committee is comprised of independent members of the community. The three major local organizations, Ocean View Community Association, Ocean View Community Development Corporation and Ocean View Chamber of Commerce, each invited residents within our community to attend our initial meeting. Committee representatives agreed to invite and involve others to attend the second meeting.

After reviewing the Ka'u to South Kona Water Master Plan (KSRWMP), the Committee has the following suggestions:

1. Well #1 at Kahuku Park

Reasons:

- The youth activities, plans for a soccer field, future expansions for keiki and adult activities
- A more proximate location to Ocean View Town and Pohue Centers
- The elevation meets the hydrogeologist's recommendations (KSRWMP pg. 7-13)\*

2. Location of Standpipes and Spigots

- One standpipe at Kahuku Park

- 4 commercial standpipes (places and room for 4 commercial trucks to load at one time) and 6 spigots located near Mamalahoa Highway at a location placed for safety and convenience
- Property located at Mamalahoa Highway and Lehua may be a potential site

3. The Balance of Funds, \$250,000

- Create a park-like setting at the highway access site, with a covered area, well-lit for safety
- Community celebration to commemorate the completion of the first Ocean View well and access site

We thank you again for including our community in your decision process.

Very truly yours,

Bob Barry	_____	929-8784
Sam Bayaoa	_____	929-9224
Carol Converse	_____	939-9365
Blossom DeSilva	_____	929-9731
Evelyn Gonzales	_____	939-9410
James Gonzales	_____	939-9410
Madeline Luce	_____	929-9802
Bobby McClure	_____	939-7373
Raymond Metzger	_____	939-9069
Diane Neufeld-Heck	_____	939-9454
Don Nitsche	_____	929-7089
Don Strong	_____	326-9228
George Wallace	_____	939-8524

Elinor Yocom	_____	939-7207
Jimmy Yocom	_____	939-7207
Bob Zeller	_____	939-9282

\* In a faxed response requested from Steve Bowles, the hydrogeologist, he stated that there was little difference in the expected hydrology between the sites at Ocean View Community Center and Kahuku Park.

**SHERRY MATTOS  
KIRK MATTOS  
POST OFFICE BOX 72  
HONAUNAU, HAWAII 96726-0072  
(808)939-7101  
(808)640-1297**

March 16, 2007

Geometrician Associates, LLC  
Ron Terry, Principal  
Geometrician Associates  
Post Office Box 398  
Hilo, Hawaii 96721

**Subject:** Environmental Assessment for Ocean view Domestic Water Well and Public Standpipe/Spigot Facility, Ka'u, Island of Hawaii, TMKs 9-2-101:32; 9-2-94:36; 9-2-93:9, 10 & 11

Dear Mr. Terry,

This is in response to your letter dated February 10, 2007. This is great news for the people in Hawaiian Ocean View Estates.

We have concerns and questions and/or recommendations.

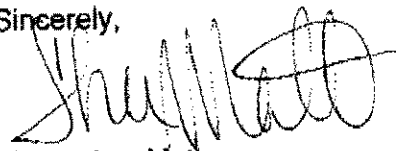
- 1) Will this facility be fenced in completely? Or at least the boundaries adjacent to my property, being TMK (3)9-2-093:012? Can we request it be fenced at the boundaries adjacent to our property by a ten foot, chain link fence with green vinyl for privacy, or the like.
- 2) As for landscaping, will foliage be planted as a sound buffer at the boundaries adjacent to our property?
- 3) Hours. Will there be certain hours of operation? We suggest no earlier than 7:00 a.m. and no later than 8:00 p.m.
- 4) Will this facility have a gate to regulate hours? We are at this moment, the only residence being affected by this. We do not want to have "strays" at the facility at all hours of the night and morning.

Please don't mistake this letter as a nuisance or negative letter, it's not. Believe me, we are excited to be in HOVE at the "right" time.

Geometrician Associates, LLC  
Ron Terry, Principal  
Geometrician Associates  
March 16, 2007  
Page Two

We look forward to your response. Contact my husband Kirk at 938-7670.  
He's has a lot more questions to discuss. Thank you for your anticipated cooperation.

Sincerely,

A handwritten signature in black ink, appearing to read "Sherry Ann Mattos". The signature is written in a cursive style with a large, stylized initial "S".

Sherry Ann Mattos



**STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION**

HAWAII DISTRICT  
50 MAKAALA STREET  
HILO, HAWAII 98720  
TELEPHONE: (808) 933-8866 • FAX: (808) 933-8869

HWY-H 07-2.0191

February 15, 2007

Mr. Ron Terry  
Principal  
Geometrician Associates, LLC  
HC 2 Box 9575  
Kea'au, Hawai'i 96749

Dear Mr. Terry:

SUBJECT: Draft Environmental Assessment Preparation Notice for Proposed County Department of Water Supply Domestic Water Well and Public Standpipe/Spigot Facility  
T.M.K. 3<sup>rd</sup> Div. 9-2-101: 032, 9-2-094:036, 9-2-093: 009, 010, 011  
Project No. P-2129  
M.P. 77.090 (Lehua Lane) Route 11, Mamalahoa Highway  
Hawaiian Ocean View Estates, Kahuku, Ka'ū, Island of Hawai'i, Hawai'i

Please be informed that this section of Mamalahoa highway is under the jurisdiction of the Department of Transportation, Highways Division. The interior roads (Lehua Lane, Keaka Parkway, etc.) appear to be privately owned roadways identified by T.M.K. 3<sup>rd</sup> Div. 9-2-040: 073.

Please send copies of the Environmental Assessment to our Department for review and comment.

Our Department will then further distribute the copies to the appropriate divisions and branches at which time we will review and provide comments. After all comments are received and coordinated, a response from the director will be sent to the County Department approving agency.

Please note that at this time we will not be able to provide comments without pre-empting the departmental response.

If you have any questions please call Mr. Clinton Yamada at (808) 933-1951.

Very truly yours,

A handwritten signature in black ink, appearing to read "Stanley M. Tamura".

STANLEY M. TAMURA  
Hawai'i District Engineer



----- Original Message -----

**From:** [JimStut@aol.com](mailto:JimStut@aol.com)

**To:** [rterry@hawaii.rr.com](mailto:rterry@hawaii.rr.com)

**Sent:** Sunday, February 11, 2007 12:01 AM

**Subject:** Re: Ocean View well

Hi Ron, I can be your contact man for the Seniors Club that meets in conjunction with the County Nutrition Program Meals. The meals are served Mondays, Wednesdays, and Fridays. A particular concern of the group is to know the exact location of the proposed well. According to some reports, it is to be located adjacent to or on the county park site. However, the long promised Senior Center Building is also to be located on the park property. We don't want there to be any conflict. Any information will be appreciated. Thanks, Jim Stutheit.

LINDA LINGLE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

PETER T. YOUNG  
DIRECTOR  
BOARD OF LAND AND NATURAL RESOURCES  
OFFICE OF WATER RESOURCE MANAGEMENT  
  
ROBERT K. MASUDA  
DEPUTY DIRECTOR  
  
AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND SPECIAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAOHOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

March 2, 2007

Geometrician Associates, LLC  
Box 396  
Hilo, Hawaii 96721

Attention: Mr. Ron Terry

Gentlemen:

Subject: Consultation on Draft Environmental Assessment for Ocean View  
Domestic Water Well and Public Standpipe/Spigot Facility, Kau, Hawaii,  
Tax Map Key: (3) 9-2-101:32; 9-2-94:36; 9-2-93:9, 10, 11

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Russell Y. Tsuji  
Administrator

Apr. 26. 2007 7:35AM

No. 0405 P. 6/12

LINDA LINGLE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

PETER T. YOUNG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA  
DEPUTY DIRECTOR

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAOLOA WE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

February 15, 2007

MEMORANDUM

TO: **DLNR Agencies:**  
 Div. of Aquatic Resources  
 Div. of Boating & Ocean Recreation  
 **Engineering Division**  
 Div. of Forestry & Wildlife  
 Div. of State Parks  
 Div. of Water Resource Management  
 Office of Conservation & Coastal Lands  
 Land Division - Hawaii District

RECEIVED  
LAND DIVISION  
2007 FEB 23 A 10:33  
OFFICE OF THE DIRECTOR  
STATE OF HAWAII

FROM: Russell Y. Tsuji  
SUBJECT: Consultation on Draft Environmental Assessment for Ocean View Domestic Water Well and Public Standpipe/Spigot Facility  
LOCATION: Kau, Hawaii, TMK: (3) 9-2-101:32; 9-2-94:36; 9-2-93:9, 10, 11  
APPLICANT: Geometrician Associates, LLC on behalf of Department of Water Supply

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by February 27, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: *Craig J. Flynn*  
Date: 2/21/07

DEPARTMENT OF LAND AND NATURAL RESOURCES  
ENGINEERING DIVISION

LD/RYT  
REF: DEAConsultOceanViewWaterWell  
Hawaii.350

COMMENTS

- ( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone \_\_\_\_.
- (X) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X
- ( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is \_\_\_\_.
- ( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- ( ) Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
- ( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
- ( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
- ( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.
- ( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- ( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.
- ( ) Additional Comments:
- ( ) Other: \_\_\_\_\_

Should you have any questions, please call Ms. Alyson Yim of the Planning Branch at 587-0259.

Signed: Eric T. Hirano  
ERIC T. HIRANO, CHIEF ENGINEER

Date: 4/21/07

LINDA LINGLE  
GOVERNOR OF HAWAII



CHIYOME L. FUKINO, M.D.  
DIRECTOR OF HEALTH

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. Box 3378  
HONOLULU, HAWAII 96801-3378

In reply, please refer to:

EPO-07-034

March 8, 2007

Mr. Ron Terry, Principal  
Geometrician Associates, LLC  
P.O. Box 396  
Hilo, Hawaii 96721

Dear Mr. Terry:

SUBJECT: Pre-Assessment Consultation for Ocean View Domestic Water Well and Public Standpipe/Spigot Facility, Ka'u, Island of Hawaii, Hawaii  
TMK: (3) 9-2-101: 032  
(3) 9-2-094: 036  
(3) 9-2-093: 009, 010 and 011

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have the following Wastewater Branch and Safe Drinking Water Branch (SDWB) comments.

Wastewater Branch

We have reviewed the request for comments to drill an exploratory well at Paradise Circle Makai, Ocean View, Hawaii, to perform pump tests, and to construct a public standpipe/spigot facility.

The project is located in the Critical Wastewater Disposal Area (CWDA) with five (5) acre lot exception. As there are no public sewers available in the area, wastewater from residents is handled by onsite wastewater systems such as cesspools and septic tanks.

Our files shows that on October 18, 1995, the Department of Health approved use of an onsite wastewater system on the property identified as TMK: (3) 9-2-094: 036. Hawaii Administrative Rules (HAR) requires that a new Individual Wastewater System (IWS) be a minimum of 1000 feet from a potable water well. However, the converse is not true – locating a potable well 1000 feet from an existing IWS.

We are concerned with any potential contamination to the proposed well via improper wastewater treatment and disposal from any nearby source. Therefore, as long as water quality is checked periodically by the well user, public health can be protected.

Mr. Terry  
March 8, 2007  
Page 2

Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at 586-4294.

Safe Drinking Water Branch

We have reviewed the subject document. We understand the Hawaii County Department of Water Supply is proposing to construct its own source, storage, and transmission network for its potable water requirements. All projects that propose development of new sources of potable water serving or proposed to serve a public water system must comply with the terms of Section 11-20-29 of the Hawaii Administrative Rules, Title 11, Chapter 20, titled, "Rules Relating to Potable Water Systems." This section requires that all new public water system sources be approved by the Director of Health prior to its use. Such approval is based primarily upon the submission of a satisfactory engineering report which addresses the requirements set in Section 11-20-29.

The engineering report must identify all potential sources of contamination and evaluate alternative control measures which could be implemented to reduce or eliminate the potential for contamination, including treatment of the water source. In addition, water quality analyses for all regulated contaminants, performed by a laboratory certified by the State Laboratories Division of the state of Hawaii, must be submitted as part of the report to demonstrate compliance with all drinking water standards. Additional parameters may be required by the Director for this submittal or additional tests required upon his or her review of the information submitted.

Furthermore, all sources of public water systems must undergo a source water assessment which will delineate a source water protection area. This process is preliminary to the creation of a source water protection plan for that source and activities which will take place to protect the source of drinking water.

The document does not mention if the applicant plans to use brackish and/or reclaimed water for non-potable water uses such as irrigation. However, if the applicant proposes the use of dual water systems or the use of a non-potable water system in proximity to an existing potable water system to meet irrigation or other needs, he or she must be careful in the design and operation of these systems to prevent the cross-connection of these systems and prevent the possibility of backflow of water from the non-potable system to the potable system. The two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow prevention devices to avoid contaminating the potable water supply. In addition backflow devices must be tested periodically to assure their proper operation. Further, all non-potable spigots and irrigated areas should be clearly labeled with warning signs to prevent inadvertent consumption of non-potable water. Compliance with Hawaii Administrative Rules, Title 11, Chapter 11-21 titled, "Cross Connection and Backflow Control," is required.

Mr. Terry  
March 8, 2007  
Page 3

Should you have any questions regarding the potable water system, please contact Mr. Kumar Bhagavan of the SDWB Compliance Section at 586-4258 in Honolulu.

Injection wells used for the subsurface disposal of wastewater, sewage effluent, or surface runoff are subject to environmental regulation and permitting under Hawaii Administrative Rules, Title 11, Chapter 23, titled, "Underground Injection Control" (UIC). The Department of Health's approval must be first obtained before any injection well construction commences. A UIC permit must be issued before any injection well operation occurs.

Authorization to use an injection well is granted when a UIC permit is issued to the injection well facility. The UIC permit contains discharge and operating limitations, monitoring and reporting requirements, and other facility management and operational conditions. A completed UIC permit-application form is needed to apply for a UIC permit.

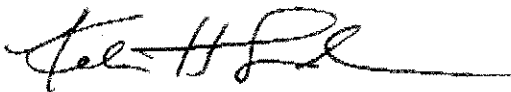
A UIC permit can have a valid duration of up to 5 years. Permit renewal is needed to keep an expiring permit valid for another term.

Questions about UIC may be directed to Mr. Chauncey Hew at 586-4258

We strongly recommend that you review all of the Standard Comments on our website: [www.state.hi.us/health/environmental/env-planning/landuse/landuse.html](http://www.state.hi.us/health/environmental/env-planning/landuse/landuse.html). Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiakai Liu with the Environmental Planning Office at 586-4346.

Sincerely,



KELVIN H. SUNADA, MANAGER  
Environmental Planning Office

c: EPO  
WWB  
SDWB  
EH-Hawaii

Enclosure: Septic Tank File #2718

LINDA LINGLE  
GOVERNOR OF HAWAII



CHIYOME LEINAALA FUKINO, M.D.  
DIRECTOR OF HEALTH

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. BOX 3378  
HONOLULU, HAWAII 96801-3378

In reply, please refer to:  
File:

Wastewater Branch  
919 Ala Moana Blvd. Room 309  
Honolulu, Hawaii 96814-4920  
Phone (808) 586-4294 Fax (808) 586-4300

SEPTIC TANK PROFILE

A septic tank file has been found and the following information is provided. In general, the Department of Health has reviewed and approved of the plans based on the information submitted as verification that a treatment individual wastewater system (IWS) such as a septic tank was constructed and authorized to be used for wastewater disposal from a building/dwelling.

Tax Map Key (3) 9 - 2 - 094 : 036 Septic Tank File # 2718

(1) = Oahu (2) = Maui (3) = Hawaii (4) = Kauai

Owner Kahiko park / Hawaii

Lot Location paradise circle HOVE

Submit Plan	<u>12, 30, 1994</u>	Plan Approval	<u>12, 05, 1995</u>
IWS BPA	<u>          </u>	Inspection	<u>08, 11, 1995</u>
System Approved	<u>10, 18, 1995</u>	Last BPA	<u>          </u>

Treatment Type / Disposal Via septic tank / bed w/soil

Use For           

Designed By Jacoby

Percolation Rate / Capacity 0 min/in / 1250 gallons

For further information, you may call the Wastewater Branch engineer as listed:

- [ ] Oahu: Johnny Ong, Wastewater Branch (808)586-4294 Fax 586-4300.
- [ ] Maui: Roland Tejano, Maui District Health Office (808)984-8232 Fax 984-8237.
- [X] Kona: Dane Hiromasa, Kealahou Health Center (808)322-1963 Fax 322-1511.
- [ ] Hilo: Jerry Nunogawa, Hawaii District Health Office (808)933-0401 Fax 933-0400.
- [ ] Kauai: Lori Vetter, Kauai District Health Office (808) 241-3323 Fax 241-3566.



PHONE (808) 594-1888

FAX (808) 594-1885



**STATE OF HAWAII**  
**OFFICE OF HAWAIIAN AFFAIRS**  
711 KAPI'OLANI BOULEVARD, SUITE 500  
HONOLULU, HAWAII 96813

HRD06/2895

March 1, 2007

Ron Terry  
Geometrician Associates  
HC 2 Box 9575  
Keaau, HI 96749

**RE: Pre-Draft Environmental Assessment for the Proposed Ocean View Domestic Water Well and Public Standpipe/Spigot Facility, Ka'u, Hawai'i Island, TMK 9-2-101: 32; 9-2-94: 36; 9-2-93:9, 10 & 11.**

Dear Mr. Terry,

The Office of Hawaiian Affairs (OHA) is in receipt of your February 8, 2007 submission and offers the following comments:

Our staff has no comment specific to the above-listed submittal at this time. However, we do look forward to reviewing the Draft Environmental Assessment upon completion. Thank you for your continued correspondence.

OHA asks that, in accordance with Section 6E-46.6, Hawaii Revised Statutes and Chapter 13-300, Hawaii Administrative Rules, if the project moves forward, and if any significant cultural deposits or human skeletal remains are encountered, work shall stop in the immediate vicinity and the State Historic Preservation Division (SHPD/DLNR) shall be contacted.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck, Native Rights Policy Advocate, at (808) 594-0239 or [jessey@oha.org](mailto:jessey@oha.org).

Aloha,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o".

Clyde W. Nāmu'o  
Administrator



**OCEAN VIEW DOMESTIC WATER WELL,  
RESERVOIR, TRANSMISSION AND  
STANDPIPE/SPIGOT FACILITIES  
KA`U, ISLAND OF HAWAII  
STATE OF HAWAII**

**ENVIRONMENTAL ASSESSMENT**

**APPENDIX 2**

**AGENCY COORDINATION LETTERS**

**AND PUBLIC INVOLVEMENT**

Part B:      Comments to EA and Responses  
              Public Meeting Publicity, Sign-in Sheet, and Notes



**SHERRY MATTOS  
KIRK MATTOS  
POST OFFICE BOX 72  
HONAUNAU, HAWAII 96726-0072  
(808)939-7101  
(808)640-1297**

June 7, 2007

Geometrician Associates, LLC  
Ron Terry, Principal  
Geometrician Associates  
Post Office Box 396  
Hilo, Hawaii 96721

Subject: Environmental Assessment for Ocean view Domestic Water Well  
and Public Standpipe/Spigot Facility, Ka'u, Island of Hawaii,  
TMKs 9-2-101:32; 9-2-94:36; 9-2-93:9, 10 & 11

Dear Mr. Terry,

Nice to have met you at the May 23<sup>rd</sup> meeting.

As you know, we are homeowners and residents immediately adjacent to the Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities proposed for TMKs(3)9-2-101:032 & 037; (3)9-2-093:009, 010 &011; (30)9-2-185:094, 095, 096 in Hawaiian Ocean View Estates, Kau, Hawaii. Our property is identified with TMK(3)9-2-093:012, and our residence is visible in the upper left corner of the photograph labeled "Proposed Standpipe/Spigot Site" on page 3-12 of the Draft Environmental Assessment date May 2007.

The proposal is good for the Hawaiian Ocean View Estates (HOVE) community. But if not handled properly could have a severe negative effect on our property and potentially cause the County of Hawaii to become liable for damages or economic loss caused to our property.

The project can cause noise problems/pollution for us and our property, particularly from large water trucks and the general public. Sound and light intrusion and pollution must be adequately addressed with landscaping, decorative fencing (not just chain link fencing), berms, and other designs that eliminate damages and loss of property value. TMKs (3)9-2-093:009, 010 &011 should be completely fenced in and should also have razor wire at the top of the fencing, such as that existing at the COH Water Supply located on the Old Mamalahoa Highway. We would require the County to also provide adequate foliage (at least six feet in height when planted) adjacent to our property. Our bedroom will be affected the most, it is the closet room

Geometrician Associates, LLC  
Ron Terry, Principal  
Geometrician Associates  
June 7, 2007  
Page Two

of our residence next to the standpipe/spigot facilities.

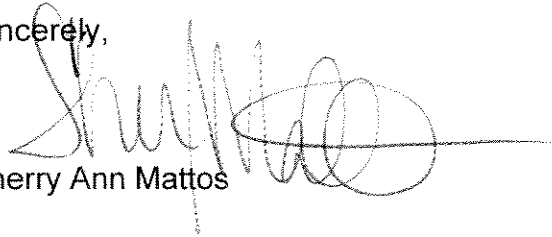
Lighting the areas would have a particularly negative effect on our property and residence. Hours of operation, including lighting, must be limited to reasonable hours, such as twelve hours beginning, e.g. at six or seven a.m. and ending at six or seven p.m. Such hours must be enforced with adequate security. Security should include a gate locked during prohibited hours.

If the above matters are not adequately addressed and resolved, "inverse condemnation" or other liability of the County could result us to the loss of value of our property and residence.

We are in favor of this project, provided the County adequately deals with eliminating or severely limiting lighting pollution, sound pollution, privacy, security and limited hours.

We look forward to your response.

Sincerely,

  
Sherry Ann Mattos

- c. Mark Van Pernis, Esq.  
Director, Office of Environmental Quality Control  
Hawaii County Department of Water Supply

# geometrician

ASSOCIATES, LLC

integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawai'i 96721 rterry@hawaii.rr.com

June 30, 2007

Kirk & Sherry Mattos  
PO Box 72  
Honaunau, HI 96726

Dear Mr and Mrs. Mattos:

**Subject: Draft Environmental Assessment (EA) for Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities, Ka`u, Island of Hawai'i, TMKs: (3rd): 9-2-101:32 & 37; 9-2-93:9, 10 & 11; 9-2-185: 94, 95, 96; Various private roads and portion of State Hwy. 11**

Thank you for your comment letter dated June 7, 2007, on the Draft EA. We appreciate your support for the project, particularly in view of your location directly adjacent to the standpipe and spigot facility. We recognize that you may experience some inconvenience and we share your interest in having a secure, orderly attractive facility that will minimize impacts to neighbors. In answer to your specific design suggestions:

- 1. Landscaping and Berms.* During the design phase of the project, the Department of Water Supply (DWS) will contract for a landscaping plan that will include topographic alteration and plantings to beautify the facility and to screen it from view from adjacent properties. With your permission, we would like to consult with you during the preparation of the landscape plan.
- 2. Fencing.* DWS has have found with our Pahoia facility that chain link fencing with no razor wire or barbed-wire is adequate for security purposes. DWS generally utilizes barbed-wire only around facilities in which there is concern for contamination of water sources, because it is unsightly, dangerous, and on occasion entangles wildlife.
- 3. Security and lighting.* DWS agrees that leaving the facility open 24 hours may adversely impact neighboring homes. Final hours have not yet been decided, but DWS is considering restricting water trucks to daytime and early evening hours (except during emergencies, when hours may be extended). The facility will be closed and locked to residents sometime in the early evening and will not reopen until about 6 AM. Any lighting at the facility will be limited to that necessary for safety and operation of the facility, will be shielded (i.e., will not point outward or upward), and will be directed

away from homes. DWS pledges to work with the community to arrive at appropriate hours that allow working families to get water but do not impose undue impacts on neighbors.

Again, thank you for your comment, and on behalf of DWS, we look forward to working with you. If you have any further questions about the project, please contact Shari Komata of DWS at 961-8070, Ext. 252.

Sincerely,

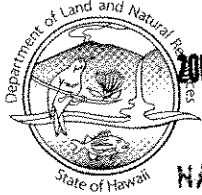
A handwritten signature in black ink that reads "Ron Terry". The signature is written in a cursive style with a large, stylized "R" and "T".

Ron Terry, Principal  
Geometrician Associates





RECEIVED  
LAND DIVISION



2007 JUN -1 P 1:41

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII


STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

May 29, 2007

MEMORANDUM

- TO: **DLNR Agencies:**
- Div. of Aquatic Resources
  - Div. of Boating & Ocean Recreation
  - Engineering Division
  - Div. of Forestry & Wildlife
  - Div. of State Parks
  - Commission on Water Resource Management
  - Office of Conservation & Coastal Lands
  - Land Division -

FROM: Russell Y. Tsuji 

SUBJECT: Draft Environment Assessment for ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities

LOCATION: Kau, Hawaii, Tax Map Key: (3) 9-2-101:32, 37; 9-2-93:9, 10, 11; 9-2-185:94, 95, 96; various private roads and portion of State Highway 11

APPLICANT: Geometrician Associates on behalf of Hawaii County Department of Water Supply

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by June 15, 2007.

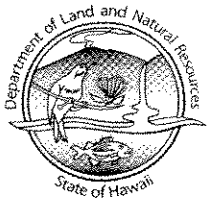
If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:   
 Date: 6-1-07

U/P/RY 30 AM 10:34 ENGINEERING



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 20, 2007

Geometrician Associates  
Box 396  
Hilo, Hawaii 96721

Attention: Mr. Ron Terry

Gentlemen:

Subject: Draft Environmental Assessment for Hawaii County, Department of Water Supply Ocean View domestic water well, reservoir, transmission and standpipe/spigot facilities, Kau, Hawaii Tax Map Key: (3) 9-2-101:32, 37; 9-2-93:9, 10, 11; 9-2-185:94, 95, 96; various private roads and portion of State Highway 11

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell Y. Tsuji".

Russell Y. Tsuji  
Administrator

DEPARTMENT OF LAND AND NATURAL RESOURCES  
ENGINEERING DIVISION

LD/RTsuji

REF: DEAforOceanViewDomesticWaterWell&RelatedFac  
Hawaii.006

COMMENTS

- (X) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X.
- ( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone \_\_\_\_.
- ( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is \_\_\_\_.
- ( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- ( ) Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
- ( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
- ( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
- ( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.
  
- ( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- ( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

- ( ) Additional Comments: \_\_\_\_\_  
\_\_\_\_\_
- ( ) Other: \_\_\_\_\_  
\_\_\_\_\_

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed:   
ERIC T. HIRANO, CHIEF ENGINEER

Date: 6-1-07

# geometrician

ASSOCIATES, LLC

integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawai'i 96721 rterry@hawaii.rr.com

June 30, 2007

Russell Y. Tsuji, Administrator  
Hawai'i State DLNR – Land Division  
P.O. Box 621  
Honolulu, HI 96809

Dear Mr. Tsuji:

**Subject: Draft Environmental Assessment (EA) for Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities, Ka'u, Island of Hawai'i, TMKs: (3rd): 9-2-101:32 & 37; 9-2-93:9, 10 & 11; 9-2-185: 94, 95, 96; Various private roads and portion of State Hwy. 11**

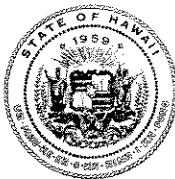
Thank you for your comment letter dated June 20, 2007, on the Draft EA, in which you provided us with a confirmation by the Engineering Division of the project's location in Flood Zone X. We appreciate your review of the document. If you have any questions about the project, please contact Shari Komata of DWS at 961-8070, Ext. 252.

Sincerely,



Ron Terry, Principal  
Geometrician Associates

LINDA LINGLE  
GOVERNOR OF HAWAII



CHIYOME L. FUKINO, M.D.  
DIRECTOR OF HEALTH

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. Box 3378  
HONOLULU, HAWAII 96801-3378

In reply, please refer to:  
EPO-07-034a

June 20, 2007

Mr. Ron Terry, Principal  
Geometrician Associates, LLC  
P.O. Box 396  
Hilo, Hawaii 96721

Dear Mr. Terry:

SUBJECT: Draft Environmental Assessment for Ocean View Domestic Water Well,  
Reservoir, Transmission and Standpipe/Spigot Facilities  
Ka'u, Island of Hawaii, Hawaii  
TMK: (3) 9-2-101: 032 and 037  
(3) 9-2-093: 009, 010 and 011  
(3) 9-2-285: 094, 095 and 096

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have no comments at this time. We strongly recommend that you review all of the Standard Comments on our website: [www.state.hi.us/health/environmental/env-planning/landuse/landuse.html](http://www.state.hi.us/health/environmental/env-planning/landuse/landuse.html). Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiakai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER  
Environmental Planning Office

c: EPO  
EH-Hawaii

# geometrician

ASSOCIATES, LLC  
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawai'i 96721 rterry@hawaii.rr.com

June 30, 2007

Kelvin H. Sunada, Manager  
Environmental Planning Office  
Hawai'i State Dept. of Health  
P.O. Box 3378  
Honolulu HI 96801-3378

Dear Mr. Sunada:

**Subject: Draft Environmental Assessment (EA) for Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities, Ka'u, Island of Hawai'i, TMKs: (3rd): 9-2-101:32 & 37; 9-2-93:9, 10 & 11; 9-2-185: 94, 95, 96; Various private roads and portion of State Hwy. 11**

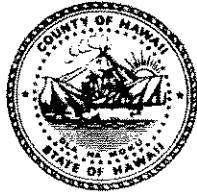
Thank you for your comment letter on the Draft EA dated June 20, 2007, in which you stated that we should review the DOH Standard comments on your website. These comments were consulted during preparation of the EA. If you have any questions about the project, please contact Shari Komata of DWS at 961-8070, Ext. 252.

Sincerely,



Ron Terry, Principal  
Geometrician Associates

erry Kim  
Mayor



Christopher J. Yuen  
Director

Brad Kurokawa, ASLA  
LEED® AP  
Deputy Director

## County of Hawaii

### PLANNING DEPARTMENT

101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720-3043  
(808) 961-8288 • FAX (808) 961-8742

June 21, 2007

Mr. Ron Terry  
Geometrician Associates  
P. O. Box 396  
Hilo HI 96721

Dear Mr. Terry:

**SUBJECT: Draft Environmental Assessment**  
**Applicant: Department of Water Supply**  
**Project: Ocean View Domestic Water Well, Reservoir, Transmission**  
**and Standpipe/Spigot Facilities**  
**Land Owner: County of Hawaii**  
**TMK: 9-2-101:32**  
**Land Owner: Aaron King**  
**TMK: 9-2-101:37**  
**Land Owner: Denis K. Shigemura & Alexandria Parker-Shigemura**  
**TMK: 9-2-93:9-11**  
**Land Owner: Oceanview Partners LLC and A&M Corporation**  
**TMK: 9-2-185:94**  
**Land Owner: Oceanview Partners LLC**  
**TMK: 9-2-185:95 & 96**  
**Various Private Roads and Portion of State Hwy. 11**  
**Kahuku, Kau, Hawaii**

---

This is to acknowledge receipt on May 24, 2007 of your request for comments on the Draft Environmental Assessment for the proposed Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities Project.

The proposed project consists of the following:

Mr. Ron Terry  
Geometrician Associates  
Page 2  
June 21, 2007

1. TMK: 9-2-101:37 - Drill an exploratory well. If developable water of appropriate quality is present, convert the exploratory well to production and build a 0.5 million gallon reservoir with appurtenant facilities. If funding is sufficient, a similar sized backup well will be drilled. Transmission line will be constructed to the standpipe/spigot facility.
2. TMK: 9-2-101:32 - If deed restrictions and County Parks & Recreation Department concerns are resolved, the backup well would be located on this parcel instead of Parcel 37.
3. TMK: 9-2-93:9, 10 & 11 – Public standpipe/spigot fill site near Lehua Lane and State Highway 11.
4. TMK: 9-2-185:94, 95 & 96 – Transmission line constructed to these parcels.
5. Various private roads and portion of State Hwy 11 - A branching transmission line will provide the opportunity for fire protection for Ocean View Town Center and Pohue Plaza.

All of the parcels are designated Agricultural by the State Land Use Commission. They are also not located within the County's Special Management Area.

For your information, the County of Hawaii General Plan (2005) became effective on February 9, 2005. Revision to Hawaii Ocean View Estates Subdivision included a change from Extensive Agriculture and Orchards to Rural. For portions of Hawaiian Ocean View Ranchos Subdivision, the change was from Extensive Agriculture to Urban Expansion.

Therefore, for TMK: 9-2-101:32 & 37 and 9-2-93:9-11 in Hawaiian Ocean View Estates Subdivision, they are now designated as Rural according to the General Plan Land Use Pattern Allocation Guide Map. County zoning is Agricultural (A-1a).

TMK: 9-2-185:94-96 in Hawaiian Ocean View Ranchos Subdivision is now designated Urban Expansion by the General Plan Land Use Pattern Allocation Guide Map. County zoning is Agricultural (A-3a).

According to Hawaii Revised Statutes, §205-4.5(a)(7), permitted uses within the State land use Agricultural districts includes *“Public, private, and quasi-public utility lines and roadways, transformer stations, communications equipment buildings, solid waste transfer stations, major water storage tanks, and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, or treatment plants, or corporation yards, or other similar structures.”* Therefore, the proposed project is a permitted use.



Mr. Ron Terry  
Geometrician Associates  
Page 3  
June 21, 2007

However, the Hawaii County Code, Chapter 25, §25-4-11(b) states that *“Any substation used by a public utility for the purpose of furnishing telephone, gas, electricity, water, radio, or television shall be a permitted use in any district provided that the use is not hazardous or dangerous to the surrounding area and the director has issued plan approval for such use.”* Therefore, Plan Approval is required from the Planning Director prior to obtaining a building permit for the proposed improvements.

If you have questions, please feel free to contact Esther Imamura at 961-8288, extension 257.

Sincerely,



CHRISTOPHER J. YUEN  
Planning Director

ETI:cd

P:\wpwin60\ETI\EA\draftPre-consult\TerryDWS\OceanView.doc

xc: Director  
Office of Environmental Quality Control  
235 South Beretania Street, Suite 702  
Honolulu HI 96813

Mr. Kurt Inaba  
Hawaii County Department of Water Supply  
345 Kekuanaoa Street, Suite 20  
Hilo HI 96720

Planning Department - Kona

# geometrician

ASSOCIATES, LLC  
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawai'i 96721 rterry@hawaii.rr.com

June 30, 2007

Christopher J. Yuen, Director  
Hawai'i County Planning Dept.  
101 Pauahi Street, Suite 3  
Hilo HI 96720

Dear Mr. Yuen:

**Subject: Draft Environmental Assessment (EA) for Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities, Ka'u, Island of Hawai'i, TMKs: (3rd): 9-2-101:32 & 37; 9-2-93:9, 10 & 11; 9-2-185: 94, 95, 96; Various private roads and portion of State Hwy. 11**

Thank you for your comment letter dated June 21, 2007, on the Draft EA. In answer to your specific comment:

1. *LUPAG Designations.* In the Final EA, references to Extensive Agriculture have been changed to Rural, and it is stated that the transmission line route also involves some lands designated as Urban Expansion.

2. *Permitted Use and Plan Approval.* We appreciate your confirmation that land use designations permit the proposed uses and that Plan Approval is required.

Again, thank you for your comment. If you have any questions about the project, please contact Shari Komata of DWS at 961-8070, Ext. 252.

Sincerely,



Ron Terry, Principal  
Geometrician Associates

June 7, 2007

Hawaii County  
Department of Water Supply  
345 Kekuaanaoa St., Suite 20  
Hilo, Hawaii 96720  
808-961-8020

Re: Draft Environmental Assessment Att: Mr. Curt Inaba  
Ocean View Well Solicitation of Public Comments

Dear Mr. Inaba,

Thank you for providing the draft environmental assessment for the Ocean View well project. After reviewing the data and information within the document, everything looks to be in order. As owners of three parcels in Hawaiian Ocean View Estates, we support the proposed methods and assessments in the draft environmental assessment report. Thank you to you and to your associates for all that you are doing to bring water to our area.

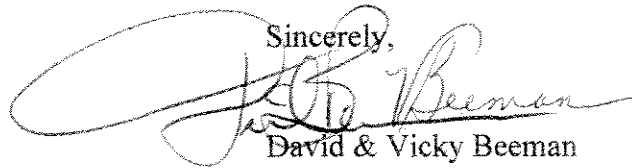
We realize that the main objective in this project is to provide a transportable source of water for all the peoples in Kau'. However, we still want to "log" the initial request for water service to privately owned lots that are not in the proposed areas outlined to be served by this project (not as part of this proposed project, but for a future date).

The lots that request service are at the top (West) end of Walaka Drive and Reef Parkway (Approximately 1.5 miles from the proposed well). The TMK's are: #9-2-089-017, # 9-2-089-018, and # 9-2-096-001. We would appreciate hearing from Hawaii County Water as to your recommendations as what we should do to encourage water transmission to individual lots. We realize it could be years, or not at all, so we need your advice so that we can at least be ready (i.e. vote by owner's for water improvement district, etc.).

Finally, a request to the Design Group for the existing project:: Would you please incorporate into the 1<sup>st</sup> phase design (1 additional "locking" distribution transmission line valve that could supply water to Walaka Drive then mauka Walaka Drive for use "someday" in the future??

Thank you again for all that's being done to bring water to our area.

Sincerely,



David & Vicky Beeman  
2224 Daybreak Court  
Anchorage, AK 99501  
907-223-0896

cc: Gemetrician Associates  
P.O. Box 396  
Hilo, HI 96721 Att: Mr. Ron Terry

# geometrician

ASSOCIATES, LLC  
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawai'i 96721 rterry@hawaii.rr.com

June 30, 2007

David and Vicky Beeman  
2224 Daybreak Court  
Anchorage AK 99501

Dear Mr. and Mrs. Beeman:

**Subject:** Draft Environmental Assessment (EA) for Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities, Ka`u, Island of Hawai`i, TMKs: (3rd): 9-2-101:32 & 37; 9-2-93:9, 10 & 11; 9-2-185: 94, 95, 96; Various private roads and portion of State Hwy. 11

Thank you for your comment letter dated June 7, 2007, on the Draft EA. I also appreciated speaking with you on the phone. In answer to your specific comment:

1. *Support for Project and for Adequacy of the EA.* Thank for your support of our efforts.
2. *Water Service for Private Lots.* If funding is available, Department of Water Supply will include in the design-build contract the drilling of a second exploratory well which will be a start to having a back up well to the first one. Once the system has a back up well, the Department will consider giving meters to customers. Should the community wish to implement an Improvement District to expand the water system provided by this project, the Department will be willing to assist the community to the extent of the Department's capacity.

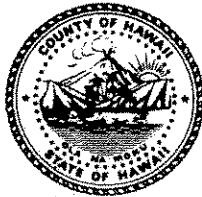
Again, thank you for your comment. If you have any questions about the project, please contact Shari Komata of DWS at 961-8070, Ext. 252.

Sincerely,



Ron Terry, Principal  
Geometrician Associates

erry Kim  
Mayor



Lawrence K. Mahuna  
Police Chief

Harry S. Kubojiri  
Deputy Police Chief

## County of Hawaii

### POLICE DEPARTMENT

349 Kapiolani Street • Hilo, Hawaii 96720-3998  
(808) 935-3311 • Fax (808) 961-2389

June 12, 2007

Mr. Ron Terry  
Geometrician Associates  
P.O. Box 396  
Hilo, Hawaii 96721

Dear Mr. Terry:

SUBJECT: Ocean View Domestic Water Well, Reservoir, Transmission  
and Standpipe/Spigot Facilities  
Location: Kau, Hawaii  
Tax Map Key: 9-2-101:32 & 37; 9-2-93:9, 10 & 11;  
9-2-185:94, 95, 96; Various private roads and portion of  
State Highway 11


This is in response to your request for comments regarding the Draft  
Environmental Assessment for the above-reference project.

Staff has reviewed the assessment and has no comments or objections to offer  
at this time.

Should you have any questions or comments, please contact Captain James B.  
O'Connor, Commander of the Ka'u District, at 939-2520.

Sincerely,

LAWRENCE K. MAHUNA  
POLICE CHIEF

  
DEREK D. PACHECO  
ASSISTANT CHIEF  
AREA II OPERATIONS

c: Director, Office of Environmental Quality Control  
Mr. Kurt Inaba, Department of Water Supply

# geometrician

ASSOCIATES, LLC  
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawai'i 96721 rterry@hawaii.rr.com

June 30, 2007

Lawrence K. Mahuna, Chief  
Hawai'i County Police Dept.  
349 Kapiolani Street  
Hilo HI 96720

Dear Chief Mahuna:

**Subject: Draft Environmental Assessment (EA) for Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities, Ka'u, Island of Hawai'i, TMKs: (3rd): 9-2-101:32 & 37; 9-2-93:9, 10 & 11; 9-2-185: 94, 95, 96; Various private roads and portion of State Hwy. 11**

Thank you for your comment letter on the Draft EA dated June 12, 2007, in which you stated that you had no comments or objections to offer at this time. We appreciate your review of the document. If you have any questions about the project, please contact Shari Komata of DWS at 961-8070, Ext. 252.

Sincerely,



Ron Terry, Principal  
Geometrician Associates

**PUBLIC MEETING**  
**OCEAN VIEW DOMESTIC WATER WELL, RESERVOIR,**  
**TRANSMISSION AND STANDPIPE/SPIGOT FACILITIES**  
**KA`U, ISLAND OF HAWAII**

**PLACE:** Ocean View Community Association  
**DATE:** Wednesday, May 23, 2007  
**TIME:** 6:00 PM

The Hawai'i County Department of Water Supply is preparing an Environmental Assessment for a project in the Ocean View area that would provide:

- A County-operated potable water well and reservoir within Paradise Circle Makai;
- A spigot and standpipe facility of Lehua Lane near State Highway 11 that would provide readily accessible public spigots for residents to easily obtain their own drinking water, as well as standpipes for water hauling trucks to have a source closer to their customers, reducing the cost of water and providing a vital public health service; and
- A water transmission line that will establish the basis for fire protection for Ocean View Town Center and Pohue Plaza.

**COMMENTS: PLEASE POSTMARK BY JUNE 22, 2007**

Geometrician Associates	Director	Kurt Inaba
PO Box 396	& copy: Office of Env. Quality Control &	Hawaii County Dept. of Water Supply
Hilo HI 96721	South Beretania Street, Suite 702	345 Kekuanaoa Street, Suite 20
	Honolulu, HI 96813	Hilo HI 96720
969-7090	(808) 586-4185	961-8070x251

COMMENTS: (OR SUPPLY YOUR OWN SHEET)

I am definitely in favor of the plan for the water well and transmission lines to the area for standpipes and spigots. We also need fire hydrants for our fire dept. to use to fill their tanker truck. Please do everything possible to make this project happen!

Aloha,  
Diane Juman  
dianef94@aol.com

# geometrician

ASSOCIATES, LLC  
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawai'i 96721 rterry@hawaii.rr.com

June 30, 2007

Diane Farrar  
Dianef94@aol.com

Dear Ms. Farrar:

**Subject: Draft Environmental Assessment (EA) for Ocean View Domestic Water Well, Reservoir, Transmission and Standpipe/Spigot Facilities, Ka`u, Island of Hawai`i, TMKs: (3rd): 9-2-101:32 & 37; 9-2-93:9, 10 & 11; 9-2-185: 94, 95, 96; Various private roads and portion of State Hwy. 11**

Thank you for your undated comments on the Draft EA in which you stated support for the project. We appreciate the fact that you took the time to attend the meeting and/or review the EA. If you have any questions about the project, please contact Shari Komata of DWS at 961-8070, Ext. 252.

Sincerely,



Ron Terry, Principal  
Geometrician Associates



**PUBLIC MEETING**  
**OCEAN VIEW DOMESTIC WATER WELL, RESERVOIR,**  
**TRANSMISSION AND STANDPIPE/SPIGOT FACILITIES**  
**KA`U, ISLAND OF HAWAII**

**PLACE:** Ocean View Community Association  
**DATE:** Wednesday, May 23, 2007  
**TIME:** 6:00 PM

The Hawai'i County Department of Water Supply is preparing an Environmental Assessment for a project in the Ocean View area that would provide:

- A County-operated potable water well and reservoir within Paradise Circle Makai;
- A spigot and standpipe facility of Lehua Lane near State Highway 11 that would provide readily accessible public spigots for residents to easily obtain their own drinking water, as well as standpipes for water hauling trucks to have a source closer to their customers, reducing the cost of water and providing a vital public health service; and
- A water transmission line that will establish the basis for fire protection for Ocean View Town Center and Pohue Plaza.

**COMMENTS: PLEASE POSTMARK BY JUNE 22, 2007**

Geometrician Associates	Director	Kurt Inaba
PO Box 396	& copy: Office of Env. Quality Control &	Hawaii County Dept. of Water Supply
Hilo HI 96721	South Beretania Street, Suite 702	345 Kekuaanaoa Street, Suite 20
	Honolulu, HI 96813	Hilo HI 96720
969-7090	(808) 586-4185	961-8070x251

COMMENTS: (OR SUPPLY YOUR OWN SHEET)

*Thank you for your positive influences  
Keep it Going!  
EARL KEMMER*

*NO ADDRESS PROVIDED / NO RESPONSE MADE*

# Water well at Ocean View?

Department of Water Supply wants input on planned project

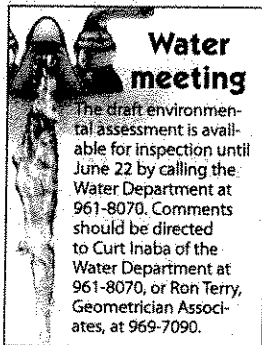
By **JASON ARMSTRONG**  
Tribune-Herald staff writer

The county Department of Water Supply is considering bringing water to Ocean View and wants to hear what residents think of the idea.

DWS officials will outline the planned project and answer the public's questions at a 6 p.m. meeting today at the Ocean View Community Center, 92-8924 Leilani Circle.

People unable to attend the public meeting have until June 22 to comment on proposed project.

The utility is studying the environmental impacts of drilling an exploratory well on a one-acre parcel located within Paradise Circle Makai.



## Water meeting

The draft environmental assessment is available for inspection until June 22 by calling the Water Department at 961-8070. Comments should be directed to Curt Inaba of the Water Department at 961-8070, or Ron Terry, Geometrician Associates, at 969-7090.

See **WATER WELL** Page A7

### NOTICE OF PUBLIC MEETING COUNTY OF HAWAII, DEPARTMENT OF WATER SUPPLY OCEAN VIEW DOMESTIC WATER WELL, RESERVOIR, TRANSMISSION AND STANDPIPE/SPIGOT FACILITIES, KA'U, ISLAND OF HAWAII'

NOTICE IS HEREBY GIVEN that the Department of Water Supply (DWS) is holding a public meeting as follows:

**PLACE:** Ocean View Community Center (Leilani Circle)  
**DATE:** Wednesday, May 23, 2007  
**TIME:** 6:00 p.m.

The DWS is preparing an Environmental Assessment for a project in the Ocean area that would provide:

- A County-operated potable water well and reservoir within Paradise Circle Makai;
- A spigot and standpipe facility off Lehua Lane near State Highway #11 that will provide readily accessible public spigots for residents to easily obtain their drinking water, as well as standpipes for water hauling trucks to have a source closer to their customers, reducing the cost of water and providing a vital public health service; and
- A water transmission line that will establish the basis for fire protection for Ocean View Town Center and Pohue Plaza.

At this meeting, officials and consultants from the DWS will present information concerning the planned project and will answer questions about water supply, construction schedule, and other items. The public is invited to attend the meeting. Should there be any questions, the public may contact Ms. Shari Komata at 961-8070.

DEPARTMENT OF WATER SUPPLY  
COUNTY OF HAWAII'

*The Department of Water Supply is an  
Equal Opportunity provider and employer.*

*If you require use of an auxiliary aid or other access accommodations,  
please contact the Department of Water Supply at  
961-8050 as soon as possible.*

Posted on the internet at:  
<http://www.hawaidws.org>

(267843 Hawaii Tribune-Herald: May 23, 2007)

## WATER WELL From front page

If follow-up testing shows suitable quality, the DWS plans to convert the well to a production well and build a 500,000-gallon reservoir, according to a description listed in the latest Environmental Notice published by the state Office of Environmental Quality Control, available on the Internet at [www.state.hi.us/health/oeqc/notice/index.html](http://www.state.hi.us/health/oeqc/notice/index.html).

A backup well also will be built on the site, provided enough money can be found to cover the cost.

Ocean View lacks municipal water, forcing the growing community to rely on rainwater and private haulers to meet residents' needs.

Gov. Linda Lingle last year released \$6 million for the design and construction of the well. In return, the county is to provide water to future state projects served by the well.

DWS officials and private consultant Ron Terry of Geome-

trician Associates could not be reached for comment Tuesday afternoon.

DWS's plans also call for public standpipes and spigots to be installed off of Lehua Lane, near Highway 11. Pipelines would connect the spigot to the well.

That would "provide readily accessible public spigots for residents to easily obtain their own drinking water, as well as standpipes for water-hauling trucks to have a source closer to their customers, reducing the cost of

water and providing a vital public health service," states the DWS's meeting announcement.

The spigot and standpipe areas will be fenced and landscaped, while access will be restricted to certain hours to reduce impact on neighboring properties, according to the project description.

Another pipeline would provide the "opportunity for fire protection for the Ocean View Town Center and Pohue Plaza," the description adds.

An initial review has found

no significant biological, historical or cultural resources present hence none would be affected by the water development.

The draft environmental assessment is available for inspection until June 22 by calling the Water Department at 961-8070. Comments should be directed to Curt Inaba of the Water Department at 961-8070, or Terry at 969-7090.

*Stephens Media's Bobby Combs contributed. Jason Armstrong can be reached at [jarmstrong@hawaiitribuneherald.com](mailto:jarmstrong@hawaiitribuneherald.com).*

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Lex Brodie's Hilo location only.

**9AM-4PM**

\*Some vehicle restrictions apply. Call store for details: 961-6001.  
Hilo & Pahoa Open Sundays 9AM-4PM.

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Rid of Your Termite Problem!**

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for a **FREE ESTIMATE**  
Some restrictions apply. Offer ends 6/20/07.

**TERMINIX**  
PCO-618



**PUBLIC MEETING, MAY 23, 2007  
OCEAN VIEW DOMESTIC WATER WELL, RESERVOIR,  
TRANSMISSION AND STANDPIPE/SPIGOT FACILITIES  
KA'U, ISLAND OF HAWAII**

**SIGN-IN SHEET**

NAME/ORG.	ADDRESS/-email/PHONE (optional)
ROBERT PENNINGTON	/SR CLUB PRGS, P.O. BOX 6363 = 939-8553 bob@hawaii.net
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**PUBLIC MEETING, MAY 23, 2007**  
**OCEAN VIEW DOMESTIC WATER WELL, RESERVOIR,**  
**TRANSMISSION AND STANDPIPE/SPIGOT FACILITIES**  
**KA`U, ISLAND OF HAWAII**  
**MEETING NOTES**

Attending: Department of Water Supply: Shari Komata  
SSFM International Inc.: Bill DeMent (Design Consultant)  
Geometrician Associates: Ron Terry (EA Consultant)  
Members of public, groups and agencies (see sign-in sheet)

1. Ron Terry explained the EA process and the comment review process. It is posted on the DWS website and public libraries have copies as well as some community organizations and individuals.
2. Questions of scheduling and timing. Execution of the DB contract to encumber all funds is a project priority. The deadline for encumbering the funding is June 30, 2008. The execution of the DB contract that will outfit the well, build the reservoir and control buildings will be prior to the completion and final testing of the exploratory well in order to encumber the funding provided by the state legislature. The scheduling for the exploratory well procurement was explained and that the earliest construction contract signing would be Sept 9, 2007. S. Komata clarified that 45 days after execution of the contract, the contractor would be expected to begin.
3. The construction budget has not been formulated at this time but the final contract will include additive or deductive alternates to ensure that the final costs are within the available funding. Park-like amenities for the standpipe and spigot site would be dependent upon available funds.
4. There are 2 construction contracts; the first is for the drilling and casing of the exploratory well and the second is for the outfitting of the well with pumps and motors, reservoir and control building.
5. Don Nitsche stated that every effort should be made to proceed utilizing parallel planning process, performing some tasks simultaneously where possible.
6. Easements for waterlines: It was explained that these available by statute and/or eminent domain.
7. Discussion was held on how to extend the funding past the June 30, 2008 deadline for encumbering the \$6 million. Andy Levin suggested that it could be done through the 2008 Budget Bill. Levin requested a project schedule to take back to the Mayor so that it could be used to communicate the timing issue with the governor with a request for funding if the existing funding lapses.
8. A question on whether an alternate well site could be put into the EA and the project scope in case the first exploratory well does not prove out. The USGS site was offered as an alternative. **Subsequent action: Site has been added to the EA.**
9. Comment was made that if the property that has the USGS well site was used for the well, the fill and spigot site could be located at a lower elevation were pressures are ample.

10. Is it possible to include the exploratory well in DB process? This would be considered risky in that there would be too many variables to price accuracy and bids would come in higher.
11. A suggestion was made to contact all possible well drilling contractors to determine their availability for the anticipated mid-September 2007 exploratory drilling startup. Community requested to know where the drilling rigs are and to be informed if they would be available in mid-September 2007. Drilling contractors have been contacted and those interested at the time of the RFP will respond.
12. A question on if out-of-state drilling contractors would be considered. If they have active contractor license it is possible.
13. The community offered to form a committee of three community members to meet every 2-3 weeks with the DWS to assist with the project. This could be a 2-way communication process. Shari Komata will check with DWS Administration and get a response to Don N. by May 25. **Subsequent Action: DWS agreed to meet with the community on more regular basis.**
14. It was suggested and agreed that the project schedule be placed on the DWS website so that the community could view it. **Subsequent action: On website.**
15. After the formal presentation and Q & A period, Bill Stockton asked about possible fire service for his planned commercial development near the corner of Keaka Parkway and Lehua Lane. No fire service is planned other than for the existing commercially zoned lots at the Pohue Plaza and Town center. The available pressures in the transmission line will need to be estimated. This work will be done during the 30% design.
16. It was pointed out that DWS realized that there was insufficient public contact and will provide bi-weekly written reports to the community. Don N. felt contact would be better face to face. **Subsequent Action: DWS agreed to meet with the community on more regular basis.**
17. It was explained that the fill-spigot lots are in escrow and that legislation has been passed to condemn the well-reservoir lot if negotiations over its purchase run out.
18. It was explained by Loren Heck that County of Hawaii Corporation Counsel is working on the County Park site (first well site) for possible site for backup well.
19. It was explained that there will be 6 public spigots and 4 standpipes with 5 meters each.
20. Who will be paying for the water passing through the 6 public spigots? It will be placed on the agenda for the regular county-DWS meeting on the HOVE. County funds are anticipated for funding this use.



**OCEAN VIEW DOMESTIC WATER WELL,  
RESERVOIR, TRANSMISSION AND  
STANDPIPE/SPIGOT FACILITIES  
KA'U, ISLAND OF HAWAII  
STATE OF HAWAII**

**ENVIRONMENTAL ASSESSMENT**

**APPENDIX 3**

**PHASE 1 ENVIRONMENTAL SITE  
ASSESSMENT**

**(PORTIONS)**

**Full Phase 1 is available for review at DWS offices in Hilo.**



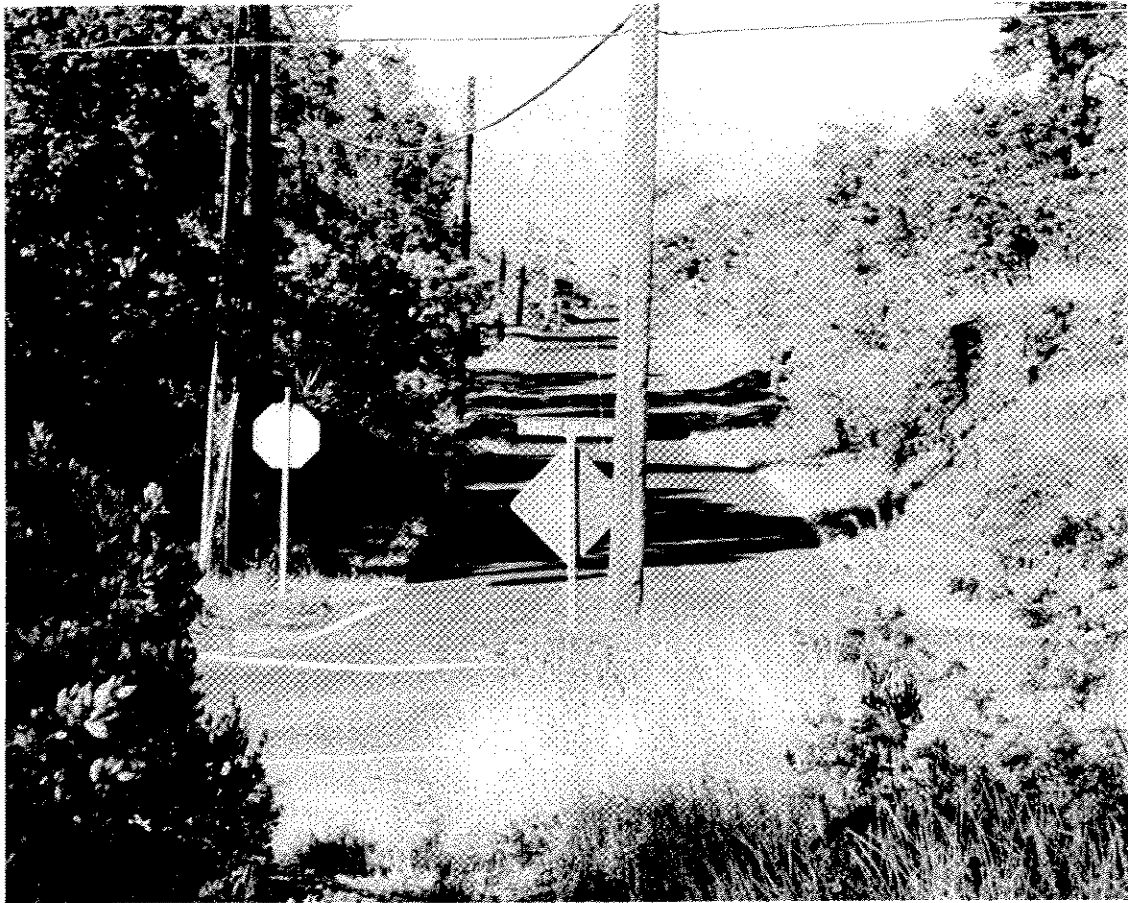


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*Phase I Environmental Site Assessment Report*

*(TMK) (3) 9-2-101:037*

*Ka`u Well Site Hawaiian Ocean View Estates*



April, 2007

# Phase I Environmental Site Assessment Report

## Ka'u Well Site Hawaiian Ocean View Estates

Prepared for:

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April, 2007

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1. Satellite Photo of Hawaii showing project site
2. Tax map showing the subject property
3. Subject Property Location on 1962 USGS Map
4. Subject Property Location on 1981 USGS Map
5. Subject Property Location on 1995 USGS Map

**Site Photographs**

Appendix 1: EDR Radius Map

Appendix 2: EDR Sanborn Map Search

## 1. INTRODUCTION

### 1.1 PURPOSE

DR Associates (DR) was retained by Geometrician LLC of Hilo, Hawaii, on behalf of the County of Hawaii to perform a Phase I Environmental Site Assessment (ESA) of a site including approximately 1 acres in Hawaiian Oceanview Estates (HOVE); tax map key (TMK) (3) 9-2-101:037 (the property). DR understands that the property is owned by Mr. Aaron King. The County of Hawaii (County) intends to purchase the land to install a municipal water source with infrastructure to supply potable water to the residents and businesses in the area. The purpose of this assessment is to provide a professional opinion as to the presence of environmental issues that may impact the use or utility of the property by new owners of this property.

This ESA was performed to assess current recognized environmental conditions at the property and propose recommendations for additional investigation, if warranted. "Recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, past release, or a material threat of a release into structures on the property or into the ground, groundwater, or surface water of the property (American Society for Testing and Materials [ASTM], 1997).

Hazardous substances are those substances defined under Section 101 of the Comprehensive Environmental Response, Compensation, and Liability Act. They are listed under Title 40 of the Code of Federal Regulations (CFR) Part 302. They include hazardous substances and toxic pollutants regulated under the Clean Water Act, hazardous wastes regulated under the Resource Conservation and Recovery Act (RCRA), and hazardous air pollutants regulated under the Clean Air Act. Petroleum products include crude oil, gasoline, kerosene, diesel oil, jet fuel, fuel oil, lubricating oil, natural gas, liquefied natural gas, and synthetic gas usable for fuel.

This assessment was conducted in general accordance with ASTM Standards, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" ASTM 1597-05 and All Appropriate Inquiry (AAI) standards that were promulgated on November 1, 2006 and November 16, 2006 respectively. As part of a pre-acquisition due diligence of the property, the client requested that DR review available information relevant to the current environmental condition of the property.

### 1.2 SCOPE OF WORK

The scope of work consisted of the ten major components described below:

1. Prepare this report describing the results of an inquiry by a qualified environmental professional. The report contains observations and conclusions relating to the apparent recognized environmental conditions, and documents the results of tasks 2 -- 10 listed below as well as data gaps that may impact the conclusions or our ability to render conclusions concerning the environmental condition of the property. This report contains our professional opinion as to whether visual and historical evidence indicates the presence of hazardous material in the soil or groundwater on the Property and defines limitations regarding this opinion,

2. Conduct interviews with past and present owners, operators, and occupants of the facility for the purpose of gathering information regarding the potential for contamination at the facility,
3. Review historical sources of information, such as chain of title documents, aerial photographs, building department records, and land use records, to determine previous uses and occupancies of the real property since the property was first developed,
4. Search for recorded environmental cleanup liens against the facility that are filed under Federal, State, or local law,
5. Review Federal, State, and local government records, waste disposal records, underground storage tank records, and hazardous waste handling, generation, treatment, disposal, and spill records, concerning contamination at or near the facility,
6. Visual inspections of the facility and of accessible portions of adjoining properties,
7. Seek specialized knowledge or experience on the part of the landowner or user,
8. Examine the relationship of the purchase price to the value of the property, if the property was not contaminated,
9. Attempt to discover commonly known or reasonably ascertainable information about the property, and
10. Assess the degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation.

The types of information to be collected about the subject property included:

- Current and past property uses and occupancies;
- Current and past uses of hazardous substances;
- Waste management and disposal activities that could have caused releases or threatened releases of hazardous substances;
- Current and past corrective actions and response activities undertaken to address past and on-going releases of hazardous substances;
- Engineering controls;
- Institutional controls; and
- Properties adjoining or located nearby the subject property that have environmental conditions that could have resulted in conditions indicative of releases or threatened releases of hazardous substances on, at, in, or to the subject property.

## 1.3 SITE DESCRIPTION

### 1.3.1 Location

The property is located on the Southwestern flank of Mauna Loa Volcano. Hawaiian Ocean View Estates (HOVE) holds claim to being the largest residential subdivision in existence with over 11,000 1-acre lots. The subject property is owned by the Aaron King and located within Paradise Circle, at the intersection of Paradise Parkway and Keaka Parkway. (Figure 1,2,3). The approximate latitude /longitude is:

**Latitude (north) 19° 05' 16"**

**Longitude(west) 155° 45' 53"**

The parcel is within the parcels designated by tax map key numbers, TMK# (3) 9-2-101:037 by the State of Hawaii. The 1 acre property is located on the northwest corner of Paradise Circle, and is adjacent to other parcels owned by the County (Figure 4).

### 1.3.2 Site and Vicinity Characteristics

The area surrounding the subject properties is sparsely populated rural residential with public services including a County Park and nearby church. The closest residences are outside the circle approximately between 1/8 and ¼ mile from the proposed well site.

### 1.3.3 Physical Description

The parcel is pie-shaped with the outer curve located along Paradise Circle. Topography is quite rough due to irregularities in the recent lava substrate and from excavation and stockpiling rocks during construction of the park. Without mechanical disturbance the property has rock piles and depressions that are over 20 feet difference in elevation. The overall slope of the property would be expected to be from northeast to southwest; however a general slope was not perceptible from observation. The subject property is not developed with the exception of a cinder roadway and septic system that was installed prior to the county's purchase of the property. The nearest development is a County Park to the south which includes one storage and maintenance building with a covered picnic area, a small temporary building which could be used as a ticket booth, a playground area, tennis courts, and a baseball field. The Property is in the State Agricultural District, and is zoned agriculture. The property elevation is between 600 feet above sea level. Access is from Mamalahoa Highway (Hwy 11). The subject property is on mountain (*mauka*) side of the highway.

The property is bounded on the north and west by Paradise Circle. Privately owned 1-acre lots are on the opposite side of the Circle, none is developed at this time. The subject property is bounded on the south by two county-owned parcels that total 10 acres; and on the east by a privately owned 1-acre lot listed to Ilsa H. Jaeger. Approximately 6 houses are located on the outside of Paradise Circle and another 6 are within 1/8 mile of the circle. .

#### 1.3.4 Physiography

The Hawaiian Islands lie at the northern margin of the tropics (21 degrees north latitude), but have a subtropical climate due to cool trade winds. The average daily temperature in Hawaii varies between 64° F and 80° F in winter and between 75° F and 88° F in summer. Rainfall for the state averages approximately 40 inches per year. Annual rainfall at the subject property is between closer to 20 inches per year (Atlas of Hawaii, 1983) and residents report a prolonged drought in the area that has lasted almost 10 years.

#### 1.3.5 Site Geology

The subject property has soils characterized as (rPXE) Puna Extremely stony muck or rLV recent A`a lava. The following soil description is from the Soil Survey of the Island of Hawaii (US Soil Conservation Service, 1972).

**Puna extremely stony muck, 3 to 25 percent slopes (rPXE).** This soil is at intermediate elevations on Mauna Loa and Hualalai.

In a representative profile the surface layer is very dark brown extremely stony muck about 5 inches thick. It is underlain by fragmental Aa lava. This soil is neutral in reaction.

Permeability is rapid, runoff is slow, and the erosion hazard is slight. Roots are matted in the surface layer, but some roots extend to a depth of 20 inches into the cracks in the lava.

This soil is used for woodland, pasture, and orchards. (Capability subclass VIIIs, nonirrigated; pasture group 1; woodland group 13)

**Lava flows, Aa (rLV),** has been mapped as a miscellaneous land type. This lava has practically no soil covering and is bare of vegetation, except for mosses, lichens, ferns, and a few small ohia trees. It is at an elevation ranging from near sea level to 13,000 feet and receives from 10 to 250 inches of rainfall annually. It is associated with pahoehoe lava flows and many soils.

This lava is rough and broken (fig. 7). It is a mass of clinkery, hard, glassy, sharp pieces piled in tumbled heaps. In areas of high rainfall, it contributes substantially to the underground water supply and is used for watershed. (Capability subclass VIIIIs, nonirrigated)

The ground at the subject property does support a significant amount of vegetation including grasses, Christmas Berry Trees and Ohia. Very little or no soil development was observed in any portion of the property. Sand, cinder and other types of soil are imported for construction and landscaping in the area.



## 2. INTERVIEWS

**Mr. Jim Stutheit:** Mr. Stutheit is a nearby resident and has lived in the subdivision for 11 years. He is concerned that there are too many septic tanks in the vicinity of the well. He is aware that the recent lava surrounding the proposed well is not adequate to filter residential wastes before they reach the water table. He is also concerned about the location of the wells because he perceives it to be an industrial use of residential land. Mr. Stutheit was not aware of any accidents or incidents involving a release of hazardous materials. He noted that there had been a brush fire nearby within the past several years. Also he was aware of the cinder pit at the top of the development. The cinder pit is apparently the site of a substantial quarry and has been used by heavy equipment for over 20 years. The Cinder pit is more than 5 miles away but is located uphill from the proposed wells.

**Mr. Ron Self:** Mr. Self has been a continuous resident of HOVE for 3 years and lived here for 5 years in the 1980s. Mr. Self was not aware of any use or release of hazardous materials in the neighborhood. He had no information on accidents spills or fires and did not think that there was any environmental impairments with the subject property.

**Mr. Dennis Riordan:** Mr. Riordan is the County Park Supervisor for Kahuku Park, located adjacent to the subject property. He has been familiar with the facility since its construction. Mr. Riordan stated that there was no use or release of hazardous materials other than household quantities of cleaners, and herbicides. Some use of petroleum is involved with grounds maintenance, but the quantities stored at the park are minimal. The park has a licensed septic facility and leach field that is within a few hundred yards of the proposed well site. Mr. Riordan was not concerned about the septic discharge and was not aware of any incidents that may impair the environmental quality of the site.

**Seller and agent:** Numerous attempts to reach Mr. Aaron King and his real estate agent. Approximately 20 attempts were made by telephone and fax, to no avail. Mr. King's agent was called approximately 5 times each time leaving a message, but she also declined to return phone calls.

### 3. HISTORICAL SOURCES OF INFORMATION

#### 3.1 SITE HISTORY

Hawaiian Ocean View Estates claims to be the largest subdivision in the world. It was originally developed by Crawford Oil Company in 1963 on 11,000 acres. The subdivision contains 156 miles of private roads and currently is developed with approximately 1300 homes. The property was originally purchased by Otto M. Ellerman and wife, the date is unknown. County real estate records are discussed in Section 5.2.1.

#### 3.2 FIRE INSURANCE MAPS

A search was conducted for Sanborn Fire Insurance Company maps to acquire historical information about the parcel and its surroundings. No Sanborn Maps were available for the subject property or vicinity (Appendix 2).

#### 3.3 INTERNET SEARCH

An internet search for Paradise Circle yielded no relevant information. Searches for Hawaiian Ocean View Estates and HOVE contained a site sponsored by the Community Association, from which historical information was obtained. There were no references to information related to environmental issues.

#### 3.3 HISTORICAL MAPS

USGS 7.5 minute topographic (quad) maps were obtained from EDR showing the years 1962, 1981 and 1995. The 1962 map shows the initial roadways of HOVE had been developed; but these roads stopped slightly north of the project site. The subject property is apparently not developed at the time data for the 1962 map was collected. The 1981 map shows HOVE roadways to be developed in their current configuration. The 1995 map shows no changes from 1981. The Map indicates that the project site is within Kipuka Waiahuli.

Kipuka is a Hawaiian term for an "island" of land completely surrounded by one or more younger lava flows. A kipuka forms when lava encircles a hill or a slight rise in the ground as it moves downslope or across relatively flat ground. Because they are surrounded by more recent flows, kipukas are often covered with mature vegetation. The subject property is a Kipuka covered with Ohia forest and surrounded by younger lava flows.

#### 3.4 CITY DIRECTORIES

A search of old city directories was not undertaken because the property has never had commercial development.

#### 4. ENVIRONMENTAL LIENS

A search for Environmental liens against the land title was not done because the property is owned by the County and DR has sufficient background information to conclude with reasonable certainty that there are no existing liens on the property.

## 5. FEDERAL STATE AND LOCAL RECORDS

A review was completed of publicly available federal, state, and local records to assess the potential presence of hazardous contamination. Federal and state environmental databases were searched to identify operations on the subject property and vicinity properties regulated by the Environmental Protection Agency (EPA) and/or the Hawaii State Department of Health (DOH).

### 5.1 FEDERAL AND STATE RECORDS

DR contracted with EDR, an independent information service, to conduct a review of County, State and Federal databases. The complete EDR report is presented as Appendix C. The EDR database search included the following listings: National Priorities List (NPL) sites; Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) sites; Corrective Action Report (CORRATS); Facility Index System (FINDS); Resource Conservation Recovery Information System (RCRIS) sites; Toxic Release Inventory System (TRI); State Land Fills/Solid Waste Disposal Sites; Underground Storage Tank (UST) sites; and Leaking Underground Storage Tank (LUST) sites (Appendix 1).

#### 5.1.1 Hazardous Material and Petroleum Releases

There have been no available reports of hazardous materials releases at the subject property, either to the State's Hazard Evaluation and Emergency Response Office (under the Hawaii Environmental Response Law) or to the National Response Center under CERCLA. Observations made during the site reconnaissance did not reveal evidence of a release of petroleum products or other industrial materials.

#### 5.1.2 Underground Storage Tanks

DR reviewed underground storage tank records maintained by the Hawaii Department of Health (DOH), Solid and Hazardous Waste Branch, to determine the existence of underground storage tanks located in the area. Of potential concern are properties at equal or at higher elevation as the project site. The State of Hawaii's underground storage tank database was also reviewed to determine whether a UST has been registered at property site.

New Hawaii underground storage tank regulations, promulgated in January 2000, require that owners of leaking UST systems notify affected members of the public of impacts from the leaking UST. These regulations will provide property owners with a mechanism to be notified if fuel releases from nearby tanks impact the subject property.

There were no leaking underground storage tanks within ¼ mile of the subject property listed in EDR's database of registered tanks. There were no underground storage tanks within ¼ mile of the subject property.

### 5.2 LOCAL RECORDS

Real Estate and title records were reviewed to determine ownership and possible uses.

### 5.2.1 Title and Lease Records.

The County of Hawaii Real property records were examined for ownership records. According to the real property tax office records, the property covers 1 acre and is owned by Aaron King of Kialua Kona. Records of sales available from the County Real Property Division include a record of sale from Mr. Ronald Lutes who owned the property prior to 1980 to Mr. Clyde Shimabukuro in 1990. Mr. Shimabukuro sold the property to Mr. King in 2005. The County purchase was not recorded on its website as of April 16, 2007.

The property is:

- Zoned agriculture
- Is in the State agricultural District,
- Is outside the Flood Zone,
- Is not within a recognized Special Design District, and
- Is outside the Special Management Area.

## 6. VISUAL INSPECTION

### 6.1 SITE RECONNAISSANCE

Project Manager David Robichaux visited the site on February 22, 2007. The weather was clear with negligible wind. Mr. Robichaux interviewed several persons at the site including two neighbors and the local park supervisor. Mr. Robichaux spent approximately 2 hours touring the area within Paradise Circle and driving the neighborhood to observe adjacent properties. Development within the Park is within 200 – 300 yards of the proposed well site. The buildings associated with the park contain a bathroom and septic system with limited use and volume. The field grounds are well utilized by joggers and residents. No irrigation system was observed; however the grass was well maintained and green indicating that there may have been some sort of subsurface irrigation, but this is speculation. The Subject property is undeveloped with the exception of a cinder roadway leading from Paradise Circle to a septic system that is installed at the bottom of the roadway (Plates 1,2). According to interviews Mr. King intended to build on the site and had the septic system installed within he past year. There is no wastewater source on the property and the septic system has never been used. The remainder of the subject property is covered by Christmas Berry and small Ohia trees. A rather large Ohia is found at the edge of the parcel along Paradise Circle. Topographic relief on the subject property exceeds 20 feet. Soil is primarily weathered rock with numerous outcrops. The parcel was overgrown in most sections preventing any thorough inspection. Adjacent parcels were also undeveloped and similar in geology and vegetation.

### 6.2 ADJACENT PARCELS

DR personnel conducted a windshield and walking survey of the surrounding properties to obtain information on potential environmental liabilities from adjacent or nearby property. Visibility of the adjacent properties was limited to the observations that could be made from public right-of ways and other areas that were accessible to the public.

Approximately 15 houses were observed within a quarter-mile radius of the subject property. The closest house is immediately across Paradise Circle from the subject property. This house is expected to have a septic system in operation within 50 yards of the proposed well site. Three other houses are near the north intersection of Paradise Circle and Paradise Parkway. Each contains an individual wastewater system.

Residents reported a large quarry operation approximately 5 miles north of the subject property at the top of HOVE which utilized heavy equipment and blasting for cinders and rock. This industrial use may be of concern if it were closer to the subject property. Although the quarry is hydraulically upgradient, the distance is sufficient to reduce concerns over released contamination reaching the subject property or underlying groundwater in significant concentrations.

### 6.3 BUILDING MATERIALS SURVEY

Observations of building materials were not part of this scope of services because there were no buildings..

## 7. SPECIALIZED KNOWLEDGE

DR requested information on any specialized knowledge from the current County employees, occupants, and from others interviewed for the purpose of this report. No information was obtained that contradicts published reports.

## 8. RELATIONSHIP BETWEEN PURCHASE PRICE AND VALUE

The purchase agreement between the County and Mr. Aaron King was not available for review. Neither is DR an authority on commercial real estate values in Hawaii. Therefore we cannot assess whether the price paid for the property reflects any discount for potential environmental issues.



## 9. COMMONLY KNOWN INFORMATION

Commonly known information was gathered through discussions with residents and County employees. It was learned that for a period the roadway system was not maintained in HOVE and that residents occasionally had difficulty driving to their houses through the underbrush. We understand that a court ruling required the landowner to maintain the roads and that since that time HOVE has grown rapidly. Residents are stunned at the rising real estate values and increasing HOVE population. WE learned that brush fires are not uncommon in the area and represent a real risk to residents due to the lack of available fire control water.

## 10. LIKELY PRESENCE OF CONTAMINATION AND THE ABILITY TO DETECT THE CONTAMINATION BY APPROPRIATE INVESTIGATION.

### 10.1 DATA GAPS

Several data gaps were encountered during the course of this environmental investigation:

- The historical maps yielded little information on past property uses. City directories, sanborns and other historical information on the property was scarce other than what could be gained from the USGS maps.
- A detailed record of tenants was only available back to 1980s.
- DR was unable to contact the seller or previous owners. The County only maintains contact information for current owners.

Despite these data gaps the information available during this assessment is adequate to form a reasonable opinion on the environmental condition of the property.

### 10.2 CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations presented below are based on the site reconnaissance, historical review, interviews, subsurface sampling and record review conducted in accordance with the scope of services.

- The original development of the property is for grazing cattle on Kahuku Ranch. Poor vegetation and difficult terrain probably reduced grazing pressure in the immediate vicinity of the subject property. We are not aware of any building or other use of the property throughout its history except as noted below.
- An individual wastewater system is installed on the subject property by the current owner. Installation required the use of heavy equipment, which may have leaked oil or hydraulic fluids during construction. No indications of a release was noted on inspection.
- No evidence of use or release of hazardous materials and/or petroleum products on adjacent parcels was found from site reconnaissance, interviews or public records.
- The proposed use of the subject property is for municipal water source. This use is quite compatible with the rural residential surroundings, but due to the recent lava formations, lack of soil, and high permeability of the substrata; groundwater at the site is potentially susceptible to contamination from above. Groundwater quality at the site and public health impacts of domestic wastewater sources within close proximity to the well site is beyond the scope of this study and outside our area of authority. DR understands that the County consulted a hydrologist on the possible impacts from the surrounding septic systems on groundwater quality at the subject property.
- With the exception noted above, this assessment finds no evidence of environmental conditions that would limit the use, activities, value or utility of the property.

## 11. REFERENCES

American Society for Testing and Materials (ASTM). Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. Standard E 1527-97.

Atlas of Hawaii Second Ed. (1983). Department of Geography, University of Hawaii, University of Hawaii Press 240p.

Environmental Data Resources, Inc. (EDR). 2005 Radius Map with GeoCheck.

US Department of Agriculture Soil Conservation Service (1972) Soil survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. USDA in cooperation with the University of Hawaii Agricultural Experiment Station



**OCEAN VIEW DOMESTIC WATER WELL,  
RESERVOIR, TRANSMISSION AND  
STANDPIPE/SPIGOT FACILITIES  
KA`U, ISLAND OF HAWAII  
STATE OF HAWAII**

**ENVIRONMENTAL ASSESSMENT**

**APPENDIX 4**

**ARCHAEOLOGICAL ASSESSMENT**



## RECHTMAN CONSULTING, LLC

HC 1 Box 4149 Kealahou, Hawai'i 96749-9710  
phone: (808) 966-7630 fax: (808) 443-0065  
e-mail: bob@rechtmanconsulting.com  
ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

May 3, 2007

RC-0472

Melissa Kirkendall, Ph.D.  
Maui Island Archaeologist  
DLNR-SHPD  
130 Mahalani Street  
Wailuku, HI 96793

Dear Melissa:

At the request of Ron Terry, Ph.D. of Geometrician Associates LLC, on behalf of the County of Hawai'i, Rechtman Consulting, LLC has prepared this request for determination of "no historic properties affected" associated with the placement of a water well and delivery system within the Hawaiian Ocean View Estates subdivision, Kahuku Ahupua'a, Ka'u District, Island of Hawai'i (Figure 1). The project will provide emergency water for Hawai'i County Fire Department uses at existing commercial centers and will make potable water available to the public at a standpipe/filling located along Highway 11. The current study area includes roughly seven acres (TMK: 3-9-2-101:032, 037) where the well(s)/reservoir will be placed; portions of the road right-of-ways of Paradise Circle Makai, Keaka Parkway, and Lehua Lane; and three adjoining parcels (TMKs: 3-9-2-93:009, 010, 011) comprising roughly three acres for the standpipe/filling location (Figure 2). Elevation within the overall project area ranges from 2,000 to 2,200 feet above sea level. The primary well(s)/reservoir site area (TMK: 3-9-2-101:037) has been extensively graded and filled (Figure 3) and a subsurface septic tank (Figure 4) had been placed sometime in the recent past, and other portions of this area have already been developed as a county park (Figure 5); the roadways are all developed (Figure 6); and the three adjoining parcels (TMKs: 3-9-2-93:009, 010, 011) along Highway 11 have also been grubbed and graded (Figure 7) with a few "islands" of *'ohi'a* (*Metrosideros polymorpha*) left intact (Figure 8). The project area is situated in what is termed Kīpuka Waiahuli, an area of 750-1,500 BP tholeiitic basalt lava that is surrounded by a recent (1907) Mauna Loa flow (Wolfe and Morris 1986).

The following is a synthesis of prior archaeological, cultural, and historical studies that are relevant to the current project area; also providing a brief culture-historical background. For a detailed ethnohistorical account of Kahuku Ahupua'a, the reader is referred to Carol L. Silva's work in Haun and Walker 1987: Appendix D).

Despite its rough and forbidding appearance, ethnographic and early historic accounts clearly indicate that Kahuku was once an active and settled area. Its coastline was noted as a fine fishing ground and even attracted Kamehameha I (Silva 1987:D-4). Fishermen and their families once have inhabited the coastal region in significant numbers. A large-scale archaeological reconnaissance survey conducted at Pohue Bay in 1987 confirms the relatively intensive use of the coastal region (Haun and Walker 1987). This survey of 3,360 acres produced 298 sites with 1,144 features in distributions that were described as "fairly dense concentrations along the coast" (1987:ii). A variety of site types were identified including C, U and L shaped walls, enclosures, platforms, terraces, cairns, linear and curved walls, petroglyphs, lava tubes and blisters, mound alignments, *pāhoehoe* excavations, anchialine ponds, overhangs, and other modified areas.

Moving away from the coast, the more inland and upslope areas were utilized for dispersed dry-land agriculture and habitation. Planting or clearing mounds, trails, house platforms, *ahu*, and walls are likely present in this zone. The far upland areas of Kahuku were apparently not inhabited on a permanent basis. Inhabitants born in the early 1800s report that upland areas were noted for bird hunting, wood procurement (sandalwood and *koa*), goat hunting, and gathering fern *pulu* (Silva 1987).

Following the *Māhele*, Kahuku Ahupua'a was awarded to W. P. Leleiohoku [LCAw. 9971]. His holdings passed to Ruth Ke'elikolani and thence to Pauahi Bishop. There were a few *kuleana* Land Commission Awards within Kahuku near the coast and near the *ala loa*. No individual awards were made in the vicinity of the current project area. During the late nineteenth century improvements to the *ala loa* were undertaken to establish a good road from Kona to Ka'ū. Portions of this old road parallel the current Māmalahoa Highway and consist of both single and two track paths and improved graveled/cindered roadways.

Archaeological research in Kahuku Ahupua'a has been most intensive on the coast, particularly Pohue Bay. The earliest work conducted at Pohue Bay was conducted under the aegis of the Bernice Pauahi Bishop Museum by such figures as W.J. Bonk, Y.H. Sinoto, V. Hansen, J. Halley Cox, and Roger Green. Although much of this research was never published, field notes remain on file at the Bishop Museum. In sum, a number of sites were identified at Pohue Bay including walled house sites, burial platforms, cave shelters, trails, anchialine ponds, and petroglyphs. Cox also reports on several hundred petroglyphs in the Pohue Bay area (Cox and Stasack 1970:80, 82). In 1965, L. Soehren excavated at two cave-shelters southeast of Pohue Bay at Kahakahakea, one of which produced a radiocarbon date ranging from the 1,300s to the 1,400s (Soehren 1966). Subsequent large-scale survey by Haun and Walker (1987) has been mentioned above.

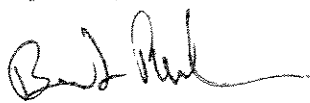
Work in upland areas of Kahuku has been much more infrequent and more recent; Rechtman Consulting, LLC conducted two small surveys (Rechtman 2000; 2002). In April 2000, a portion of a one-acre parcel at the upper limits of Hawaiian Ocean View Estates Subdivision was surveyed. The parcel was situated on a 1907 flow and produced no cultural remains. Later, in January 2002, a 2.5-acre parcel along Kohala Blvd. was surveyed. A lava tube was discovered on the property and only modern era items were found. No other cultural remains were recorded during that study. Rechtman Consulting, LLC also conducted an archaeological and limited cultural assessment (Desilets and Rechtman 2004) for a 66.5-acre project area located just *makai* of Highway 11, roughly 3.5 kilometers to the northwest of the current study area. That study (*ibid.*) resulted in negative findings with respect to archaeological resources and the exercise of traditional and customary practices.

Based on the results of previous work in the area, as summarized above, a set of archaeological expectations for the general project area can be formulated. Given that historical accounts indicate dispersed habitation with associated agriculture, remnant surface features may include house platforms, burial areas, and agricultural features such as mounds and walls. Native informants testifying before the Boundary Commission in the nineteenth century also spoke of roads and trails, one of which was used for hauling tree trunks to the coast for use in canoe manufacture (Silva 1987:D-5). Lava tubes may also be present in the project area. These geologic features are often important loci of traditional Hawaiian activity including temporary habitation and burial.

On April 2, 2007, Matthew R. Clark, B.A. and Robert B. Rechtman, Ph.D. conducted a field inspection of the study area. The property boundaries were clearly evident and the vegetation cover was minimal. As mentioned above much of the study area has been mechanically altered, the roadway portions have been previously developed. There were no archaeological resources observed on the surface of the parcel and the likelihood of subsurface resources is extremely remote given the extensive grading and exposed bedrock. Based on these negative findings, on behalf of our client, we are requesting that DLNR-SHPD issue a written determination of "no historic properties affected" in accordance with HAR 13§13-284-5(b)1.

Should you require further information, or wish to visit the parcel, please contact me directly.

Respectfully,



Bob Rechtman, Ph.D.  
Principal Archaeologist



## References Cited

Cox, J., and E. Stasack

- 1970 *Hawaiian Petroglyphs*. B. P. Bishop Museum Special Publication No. 60. B. P. Bishop Museum, Honolulu.

Desilets, M., and R. Rechtman

- 2004 Archaeological and Limited Cultural Assessment for a Proposed Solid Waste Transfer Station and Recycle Center (TMK: 3-9-2-156:002, 003, 043), Kahuku Ahupua'a, Ka'u District, Island of Hawai'i. Rechtman Consulting LLC report RC-0197. Prepared for Ron Terry, Ph. D., Kea'au.

Haun A., and A. Walker

- 1987 Archaeological Reconnaissance Survey, Hawaiian Riviera Resort Project Area, Land of Kahuku, Ka'u District, Island of Hawaii. PHRI Report 308-060487. Prepared for Palace Development Corporation and Hawaii Ka'u Aina Partnership.

Rechtman, R.

- 2000 Archaeological survey of a portion of a parcel at the upper limits of Hawaiian Ocean View Estates (HOVE) Subdivision (TMK:3-9-2-149:052), Kahuku Ahupua'a, Ka'u District, Island of Hawai'i Rechtman Consulting letter report RC-0002 (HOVE). Prepared for Roy A. Vitousek, Kailua-Kona, Hawai'i.
- 2002 Archaeological Investigation of a Roughly 2.5 Acre Parcel along Kohala Blvd in the Hawaiian Ranchos Subdivision (TMK:3-9-2-197:001), Kahuku Ahupua'a, Ka'u District, Island of Hawai'i. Rechtman Consulting letter report RC-0107. Prepared for William Keoni Fox, American Tower Corporation, Honolulu, Hawai'i.

Silva, C.

- 1987 "Appendix D: Historical Documentary Research." IN Haun and Walker 1987:D-1-18.

Soehren, L.

- 1966 Hawaii Excavations: 1965. Typed manuscript, B.P. Bishop Museum, Honolulu.

Wolfe, E., and J. Morris

- 1996 *Geological Map of the Island of Hawaii*. U.S. Department of the Interior, U.S. Geological Survey.

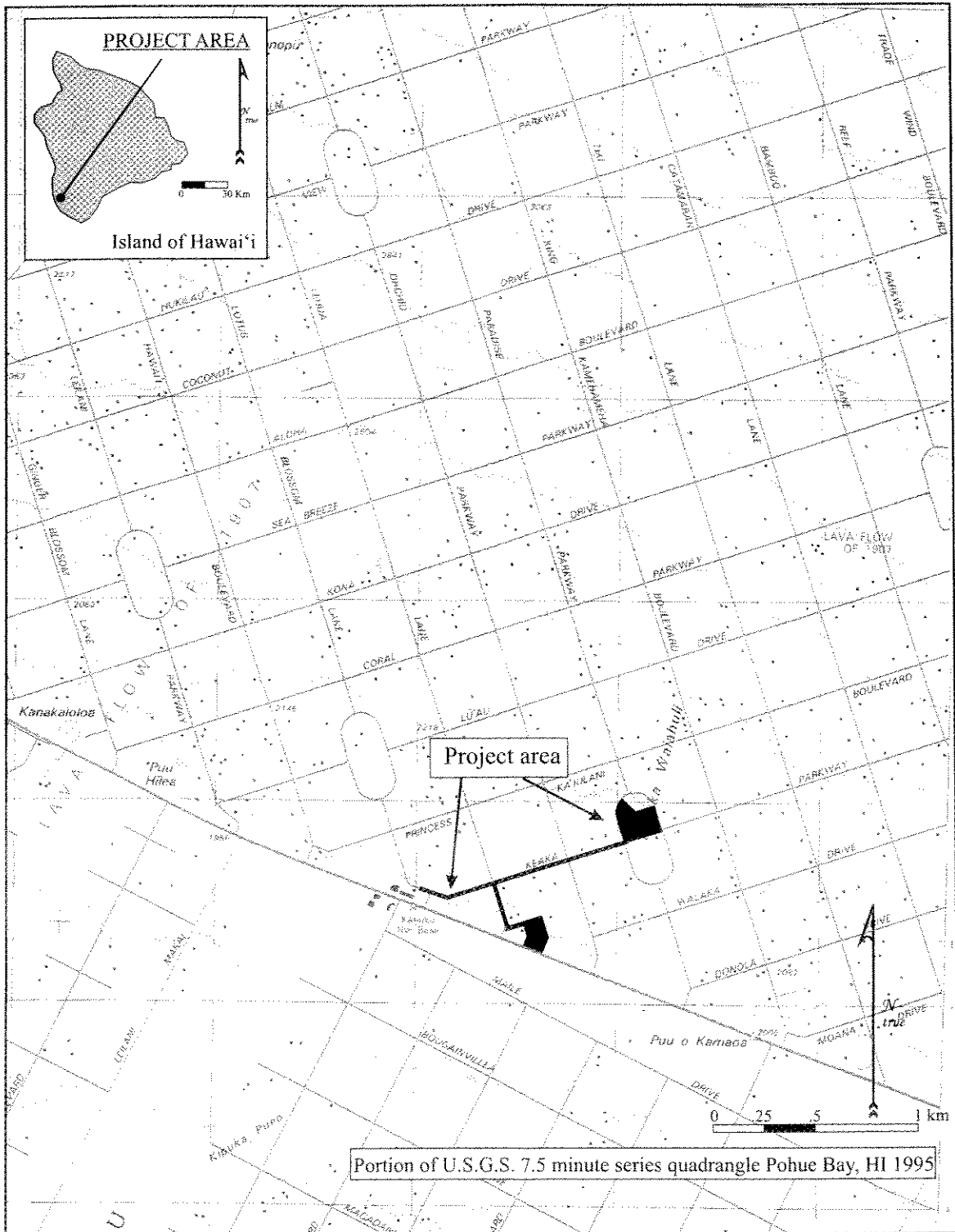


Figure 1. Project area location.

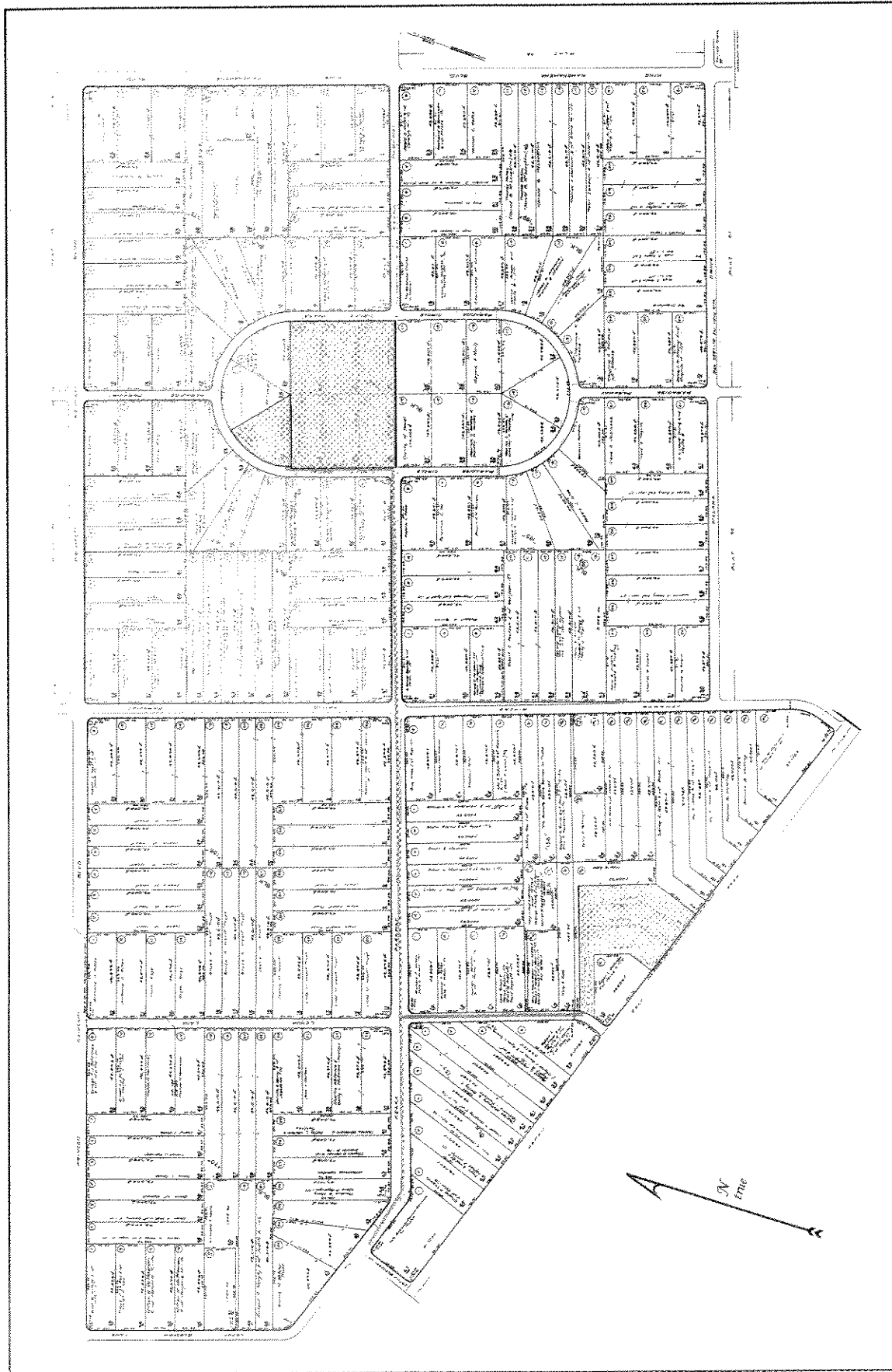


Figure 2. Composite Tax Map Key (3-9-2-84, 93, 94, 101) showing study area (shaded gray).

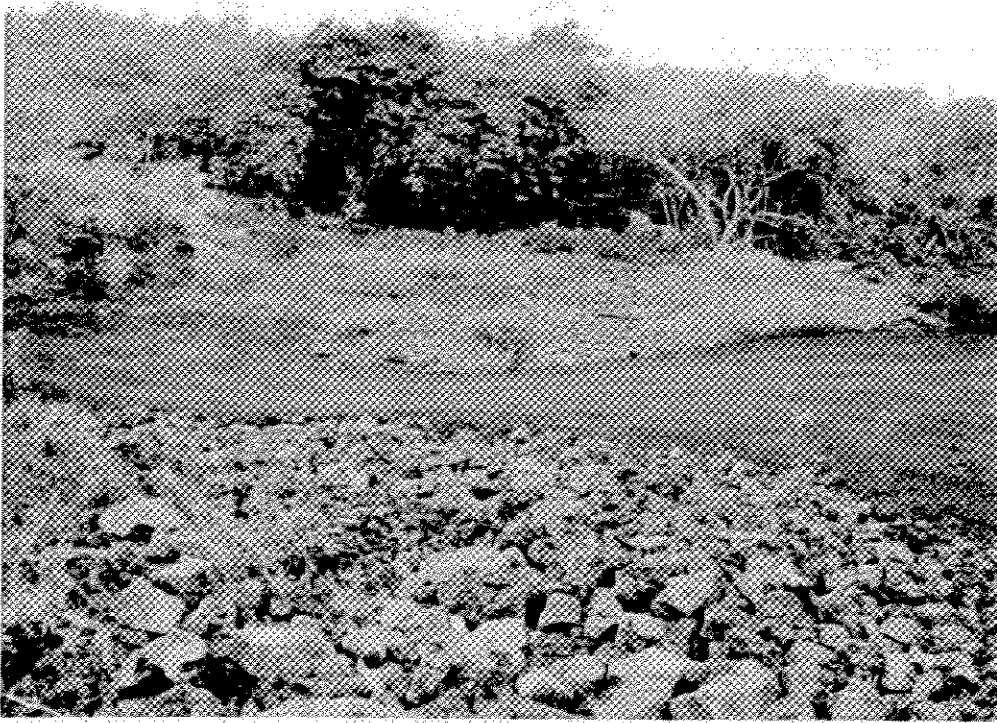


Figure 3. Typical terrain on Parcel 101-37, view to the northeast.

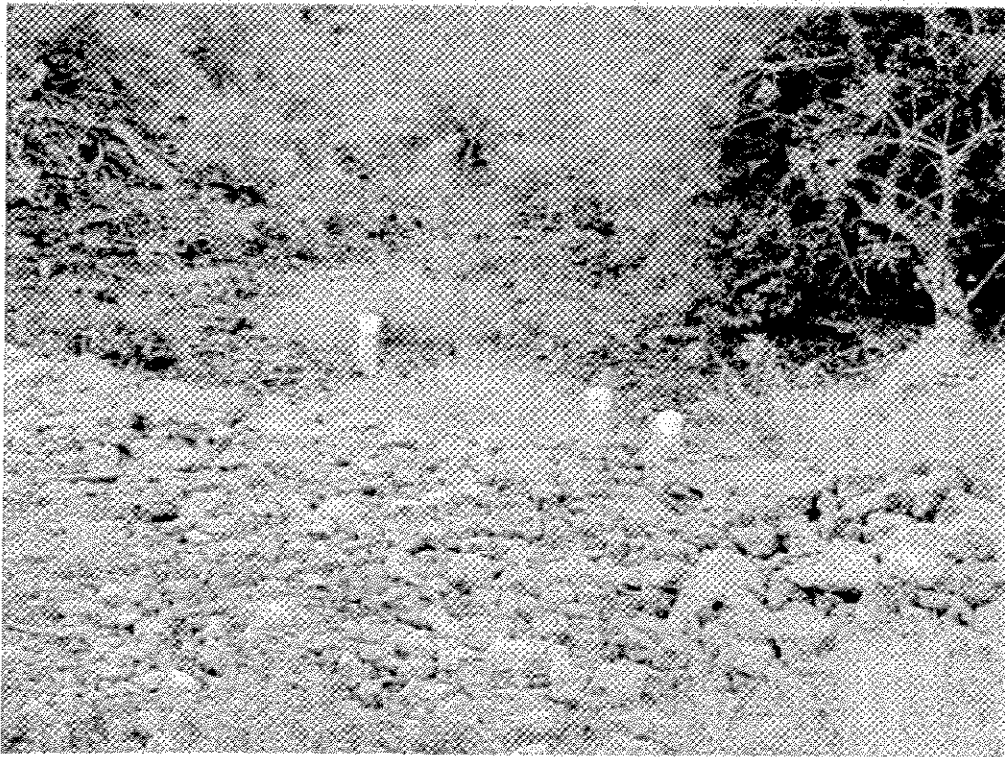


Figure 4. Location of underground septic tank(s) on Parcel 101-37, view to southeast.



Figure 5. Developed county park on portion of Parcel 101:32, view to southeast.

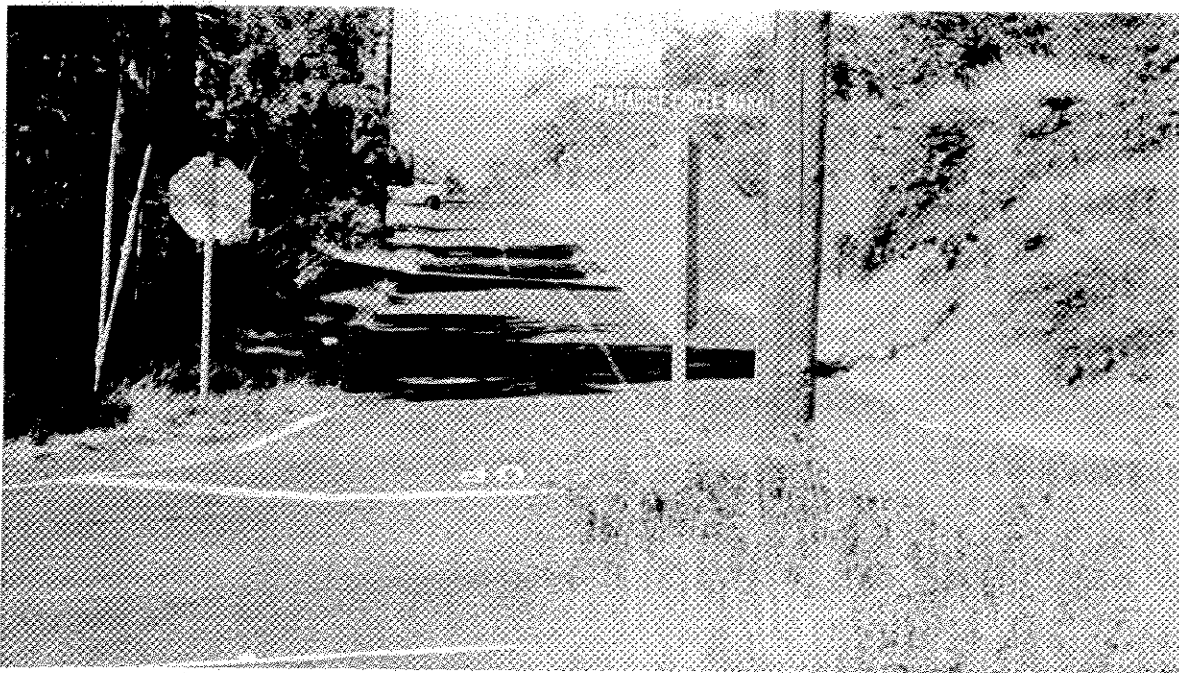


Figure 6. Road right-of-way portion of the study area at the intersection of Keaka Parkway and Paradise Circle Makai, view to the west.



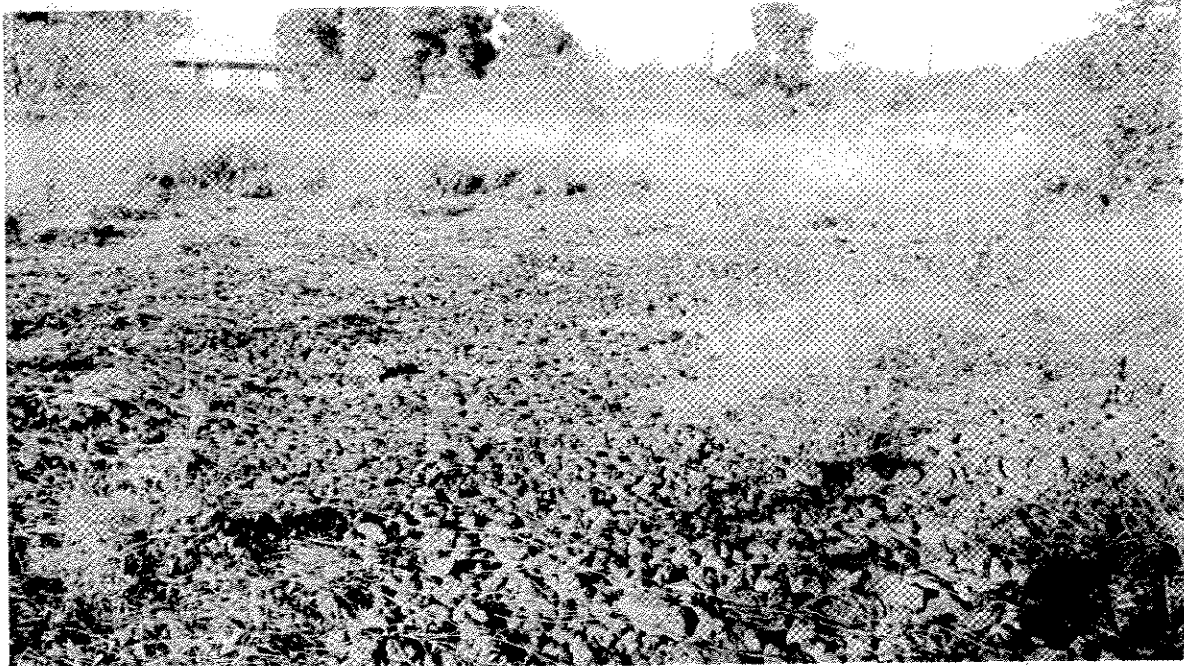


Figure 7. View to the east across Parcels 93-009, 010, 011 showing extensive mechanical alteration.



Figure 8. Typical remnant “‘ōhi‘a island” on Parcels 93-009, 010, 011, view to the west.

**OCEAN VIEW DOMESTIC WATER WELL,  
RESERVOIR, TRANSMISSION AND  
STANDPIPE/SPIGOT FACILITIES  
KA`U, ISLAND OF HAWAII  
STATE OF HAWAII**

**ENVIRONMENTAL ASSESSMENT**

**APPENDIX 5**

**BOTANICAL AND ARCHAEOLOGICAL  
STUDIES FOR USGS SITE**





**FLORA AND FAUNA REPORT  
PROPOSED AMERICAN TOWER CELLULAR TOWER  
OCEAN VIEW, TMK (3<sup>rd</sup>) 9-2-197:001, ISLAND OF HAWAII**

by Ron Terry, Ph.D., and Patrick Hart, Ph.D.  
January 2002

*General Site Description*

The project site is a 10,000 square foot portion of a 2.549-acre property in Hawaiian Ocean View Ranchos that borders an easement road just makai of State Highway 11 as well as Kohala Drive (see attached figure). Also included in the site are an existing access road leading from the easement road to the cell tower pad and a 12-foot long spur from that road to the cell tower pad.

Most of the property on which the project site is located has not been graded, but it does contain several roads and pads that have been graded for access and storage of various facilities. A site that has been identified for a HELCO substation was subdivided from the original parcel directly adjacent to the proposed cell tower pad. The elevation of the site is approximately 2,000 feet above mean sea level, and slopes on the property vary from moderate to steep. Median annual rainfall is approximately 40 inches (Giambelucca et al. 1986).

*Vegetation Dynamics*

The original vegetation of the general area was dry-mesic lowland forest, per Gagne and Cuddihy (1990), consisting of a small-stature, open canopy forest of 'ohi'a (*Metrosideros polymorpha*), with scattered shrubs of a'ali'i (*Dodonaea viscosa*), pukiawe (*Styphelia tameiameia*), and other shrubs, herbs, vines and ferns. The vegetation has been directly disturbed in places by grading but more fundamentally altered by alien species invasion, particularly Christmas berry (*Schinus terebinthifolius*), which is now the dominant species of the general area.

*Flora and Fauna Survey*

A plant and bird survey was conducted in the proposed project area on January 3, 2002. The purpose of the survey was to identify any state or federally listed endangered plant species growing on or near the project site, and to summarize the populations of native and introduced plant species. During the course of the survey, all bird species present on the project site were also identified by sight and sound. All portions of the proposed project site were surveyed, but special attention was given to a large section of collapsed lava tube that obliquely bisects the property, as this feature had the greatest potential for harboring endangered plant species. A total of 28 plant species were identified, including 12 natives and 16 aliens. All plant species observed during the survey are listed in Table 1 below. Four bird species were observed.

**Table 1  
Plant Species on Project Site**

<b>Scientific Name</b>	<b>Family</b>	<b>Common Name</b>	<b>Life Form</b>	<b>Status*</b>
<i>Asclepias physocarpa</i>	Asclepiadaceae	Balloon plant	Shrub	A
<i>Chamaecrista nictitans</i>	Fabaceae	Partridge pea	Shrub	A
<i>Cocculus trilobus</i>	Menispermaceae	Huehue	Vine	I
<i>Diospyros sandwicensis</i>	Ebenaceae	Lama	Tree	E
<i>Dodonea viscosa</i>	Sapindaceae	'A'ali'i	Shrub	I
<i>Doryopteris decipiens</i>	Sinopteridaceae	'Iwa 'Iwa	Fern	E
<i>Emilia fosbergii</i>	Asteraceae	Flora's paintbrush	herb	A
<i>Indigofera suffruticosa</i>	Fabacea	Indigo	Shrub	A
<i>Kalanchoe tubiflora</i>	Crassulaceae	Chandelier Plant	Herb	A
<i>Lantana camara</i>	Verbenaceae	Lantana	Shrub	A
<i>Leucaena leucocephala</i>	Fabaceae	Koa haole	Tree	A
<i>Macroptilium lathyroides</i>	Fabaceae	Cow pea	Shrub	A
<i>Metrosideros polymorpha</i>	Myrtaceae	'Ohi'a	Tree	E
<i>Opuntia ficus-indica</i>	Cactaceae	Prickly pear	Shrub	A
<i>Osteomeles anthyllidifolia</i>	Rosaceae	'Ulei	Shrub	I
<i>Panicum maximum</i>	Poaceae	Guinea Grass	Grass	A
<i>Pennisetum setaceum</i>	Poaceae	Fountain grass	Grass	A
<i>Peperomia leptostachya</i>	Piperaceae	Peperomia	Herb	I
<i>Plectranthus parviflorus</i>	Lamiaceae	'Ala 'ala wai nui	Herb	I
<i>Pleomele hawaiiensis</i>	Agavaceae	Halapepe	Tree	E, End
<i>Pluchea carolinensis</i>	Asteraceae	Sourbush	Shrub	A
<i>Portulaca oleracea</i>	Portulacaceae	Pigweed	Herb	A
<i>Portulaca pilosa</i>	Portulacaceae	Portulaca	Herb	A
<i>Rhynchelytrum repens</i>	Poaceae	Natal Red Top	Grass	A
<i>Schinus terebinthifolius</i>	Anacardiaceae	Christmas berry	Shrub	A
<i>Sida fallax</i>	Malvaceae	Ilima	Shrub	I
<i>Sophora chrysophylla</i>	Fabaceae	Mamane	Tree	E
<i>Waltheria indica</i>	Sterculiaceae	'Uhaloa	shrub	I

A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species

### *Vegetation of the Project Site*

A remnant and highly disturbed dry-mesic native Hawaiian forest occupies most of the project site. The cell tower pad itself lies to the east of the collapsed lava tube that bisects the property and is dominated by the aliens Christmas berry and guinea grass (*Panicum maximum*). Most of the native species, including 'ohi'a, mamane (*Sophora chrysophylla*), and lama (*Diospyros sandwicensis*), occur either in or to the west of the collapsed lava tube.

### *Endangered Plant Species*

Two individuals of the endangered halapepe (*Pleomele hawaiiensis*) are located in the collapsed lava tube approximately 30 feet to the southwest of the steel container (transport van) located on the western stub of the "dirt road" shown on the attached figure. These plants appear to be within the property boundaries of the project site, about 100 feet from the actual cell tower pad. The western edge of the graded gravel road extends to within 20 feet of these trees.

## *Birds*

Four species of introduced birds were detected during the survey: the Northern cardinal (*Cardinalis cardinalis*), Spotted dove (*Streptopelia chinensis*), House finch (*Carpodacus mexicanus*), and Japanese white-eye (*Zosterops japonicus*). No native Hawaiian birds were identified during the survey; however, it is likely that the 'Apapane (*Himatione sanguinea*) and Hawai'i 'Amakihi (*Hemignathus virens virens*) occasionally visit the site. No federal or State listed endangered Hawaiian forest bird species would be expected to use the site due to its low elevation and lack of adequate forest resources. The native Hawaiian Hawk or 'Io (*Buteo solitarius*) probably makes some use of the area for hunting. It is also possible that certain native seabirds fly over the site, but it is unlikely that any with threatened or endangered status would find the site suitable habitat.

The only native Hawaiian land mammal, the Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), may also be present in the area, as it is present in many areas on the island of Hawaii. Observation took place in daylight, and therefore the lack of bat observations does not signify an actual absence of bats. As with the hawk, however, the project area would not be expected to represent essential habitat for this species.

## *Impacts and Mitigation Measures*

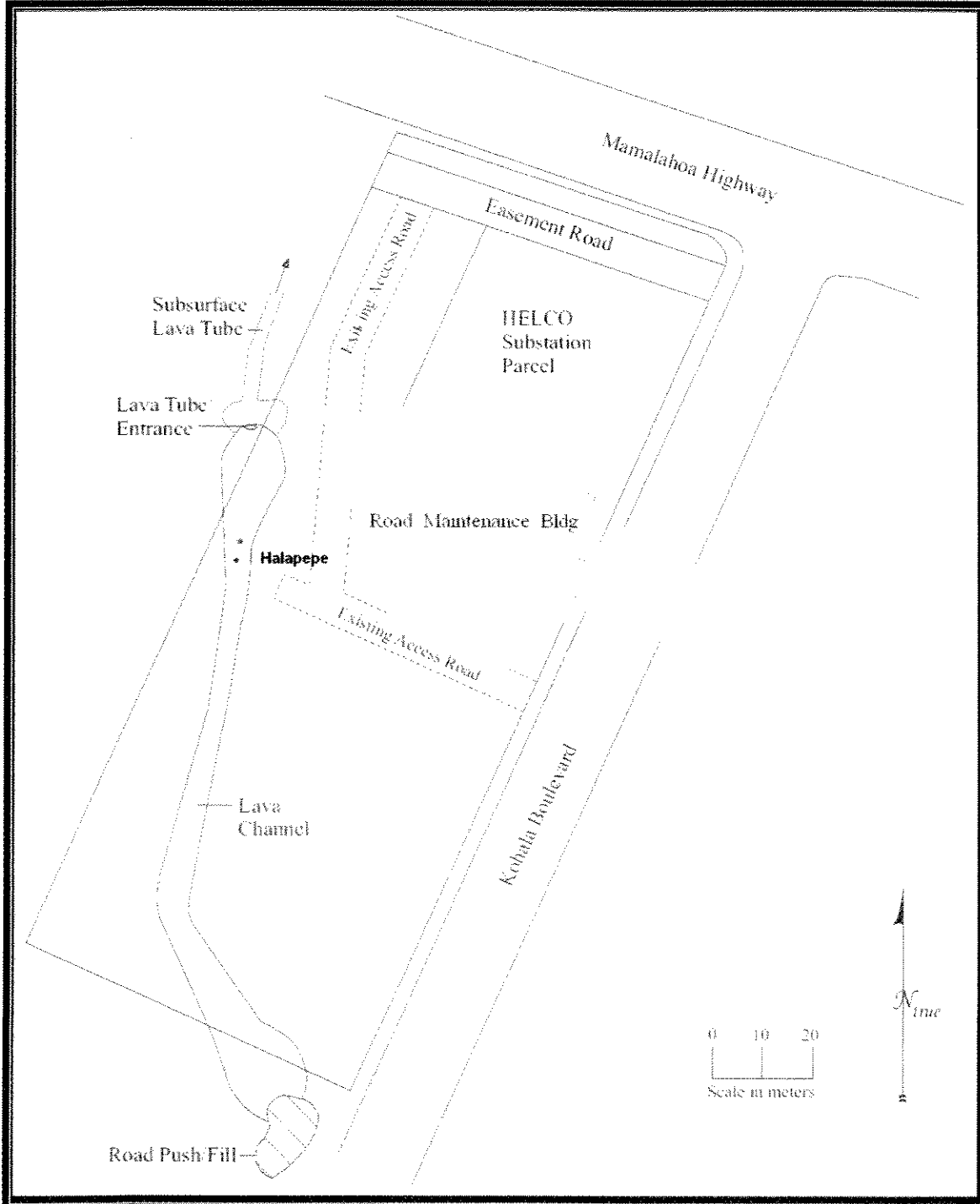
Other than the halapepe, no listed, candidate or proposed threatened or endangered plant or animal species were found or would be expected in the area. In terms of conservation value, no other botanical or zoological resources requiring special protection are present. The halapepe plants require special consideration in site planning. As stated above, the plants are found within a small ravine formed by a collapsed lava tube, which has probably restricted grazing by feral ungulates and allowed the plants to persist and propagate. All construction and maintenance personnel should be made aware of the location of the plant and the need to avoid any grading, dumping, disposal of liquid, or any other potentially harmful activity in the vicinity of the plants. As long as disturbance to the immediate area (a circle roughly 50 feet in diameter surrounding the plants) is avoided, it is unlikely that the project would cause any harm to the plants.

Furthermore, we recommend that American Tower: 1) survey the precise location of the plants, and 2) consult with the Hawai'i State Department of Land and Natural Resources, Division of Forestry and Wildlife, to inform the agency of the location of the plants and the plans for the tower, and to accept advice concerning their safekeeping.

## **References**

- Gagne, W., and L. Cuddihy. 1990. "Vegetation," pp. 45-114 in W.L. Wagner, D.R. Herbst, and S.H. Sohmer, eds., *Manual of the Flowering Plants of Hawaii*. 2 vols. Honolulu: University of Hawaii Press.
- Giambelucca, T.W., Nullet, M.A., and T.A. Schroeder. 1986. *Rainfall Atlas of Hawaii*. Honolulu: Hawaii Department of Land and Natural Resources.

**Map of Halepepe Location on USGS Site (TMK 9-2-197:01) (2007)**



Location is approximate.

**Photos of USGS Site (2007)**

**Existing Well Site**



**Halepepe in Collapsed Lava Tube Ravine**



**RECHTMAN CONSULTING**  
HC 1 Box 4149 • Keāhau, Hawai'i 96749  
phone: (808) 966-7636 • (808) 966-6235  
toll free fax: (800)406-2665 • e-mail: brechtman@aol.com

January 10, 2002

RC-0107

William Keoni Fox  
American Tower Corporation  
1088 Bishop Street, Suite 1903  
Honolulu, HI 96813  
Fax (808) 585-8110

Dear Mr. Fox:

At your request, in support of a National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) Section 106 study, Rechtman Consulting performed an archaeological investigation of a roughly 2.5 acre parcel along Kohala Blvd. in the Hawaiian Ranchos Subdivision, Kahuku Ahupua'a, Ka'u District, Island of Hawai'i (Figure 1). This area is the proposed location of an American Tower Corporation cellular tower site. The proposed site is on the east central portion of TMK:3-9-2-197:001 (Figure 2). The tower and associated infrastructure will be contained within a 100 x 100 foot fenced area (Figure 3). This 2.5-acre parcel is at an elevation of about 1,960 feet (597 meters), and the ground surface is mixed 'a'ā and pāhoehoe flow. Vegetation within the project area includes: Christmas-berry (*Schinus terebinthifolius*), 'ōhi'a (*Metrosideros polymorpha*), and koa haole (*Leucaena leucocephala*), Guinea grass (*Panicum maximum*), māmane (*Sophora chrysophylla*), lama (*Diospyros sandwicensis*), and Hala pepe (*Pleomele hawaiiensis*).

Kahuku Ahupua'a was awarded in its entirety to W. P. Leleiolelo during the *Māhele* [LCAw. 9971]. His holdings passed to Ruth Ke'elikolani and ultimately to Pauahi Bishop. There were a few *kuleana* Land Commission Awards within Kahuku close to the coast and near the *ala loa*; however, no individual awards were made in the vicinity of the project area. During the late nineteenth century improvements to the *ala loa* were undertaken to establish a good road from Kona to Ka'u. Portions of this old road parallel the current Māmalahoa Highway and consist of both single and two track paths and improved graveled/cindered roadways. The current paved Easement Road (see Figure 3) to the northeast (*mauka*) of the project area most likely follows the course of the original Kona to Ka'u Government Road. Recent archaeological studies (Rechtman 2000; n.d.) for two other proposed cell tower locations in Kahuku Ahupua'a both produced negative results with respect to the identification of archaeological resources. One of those studies (Rechtman n.d.) was on a parcel about two miles distant from the current study area at a similar elevation, and a relatively unimproved portion of the old Kona to Ka'u Road was observed during that field investigation.

On January 3, 2002, Dennis S. Dougherty, B.A., under the supervision of Robert B. Rechtman, Ph.D., performed a field reconnaissance of the entire project area, the limits of which were delimited by existing property corner pins. The project area is partially grubbed and graded, is bisected by an improved gravel access road, and contains a 40 ft. shipping container and a 1200-gallon water tank. A large collapsed lava channel (orientated north/south) courses across

the property. A lava tube entrance to the underground *mauka* continuation of this channel is located along the western property boundary. This tube was examined for a distance of roughly 60 meters beyond the property boundary. A goat skeleton, a piece of leather strapping, and a few shiny (ventral nacre still present) 'opihī shells were observed on the rocky floor of the tube entrance. A lack of any other items within the tube leads to the conclusion that the items observed are likely modern. No historic properties were observed within the tube; likewise, no historic properties were observed anywhere on the surface of the study parcel. It is therefore concluded that the placement of a cell tower facility will not have a direct adverse impact on any archaeological resources.

Thank you for the opportunity to provide you with these services. Should you have any questions, or would like further information please feel free to contact me

Sincerely,

Bob Rechtman, Ph.D.

*Attachments (3): Figure 1, Figure 2, Figure 3*

### **References Cited**

Rechtman, R.

2000 Letter report for an archaeological survey of a U.S. Cellular cell tower site on TMK:3-9-2-149:052, Hawaiian Ocean View Estates, Kahuku Ahupua'a, Ka'u District, Island of Hawaii. Rechtman Consulting Report RC-0002 (HOVE). Prepared for Roy A Vitousek III, Cades Schutte Fleming & Wright, Kailua-Kona.

Rechtman, R.

n.d. Due diligence study for an archaeological survey of an AT&T Wireless cell tower site on TMK:3-9-2-184:4, Kona Kai subdivision, Kahuku Ahupua'a, Ka'u District, Island of Hawaii. Rechtman Consulting Project RC-0091. Field study performed for Jerry Erickson, AT&T Wireless, Kea'au.

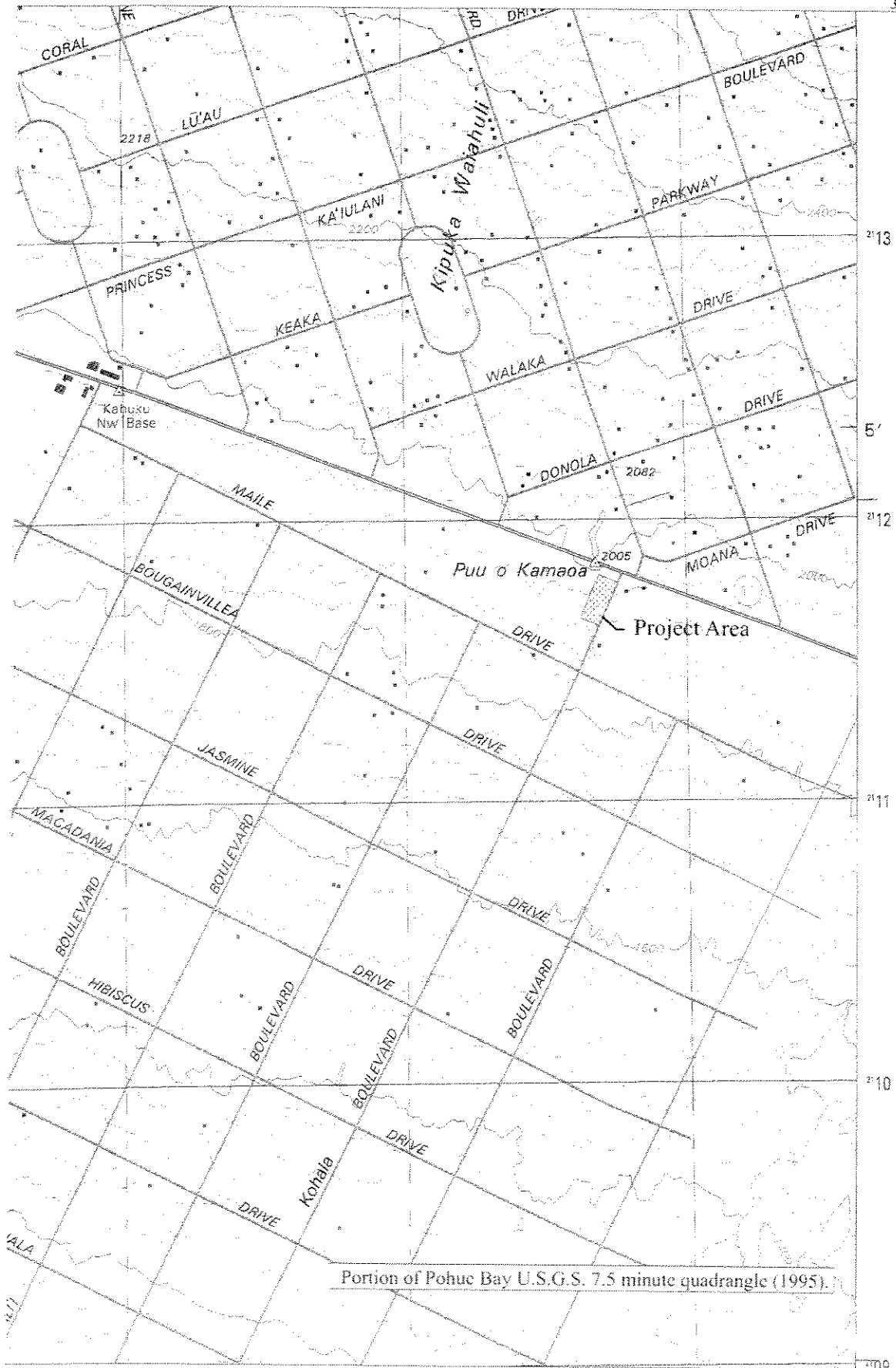


Figure 1. Project area locataion.



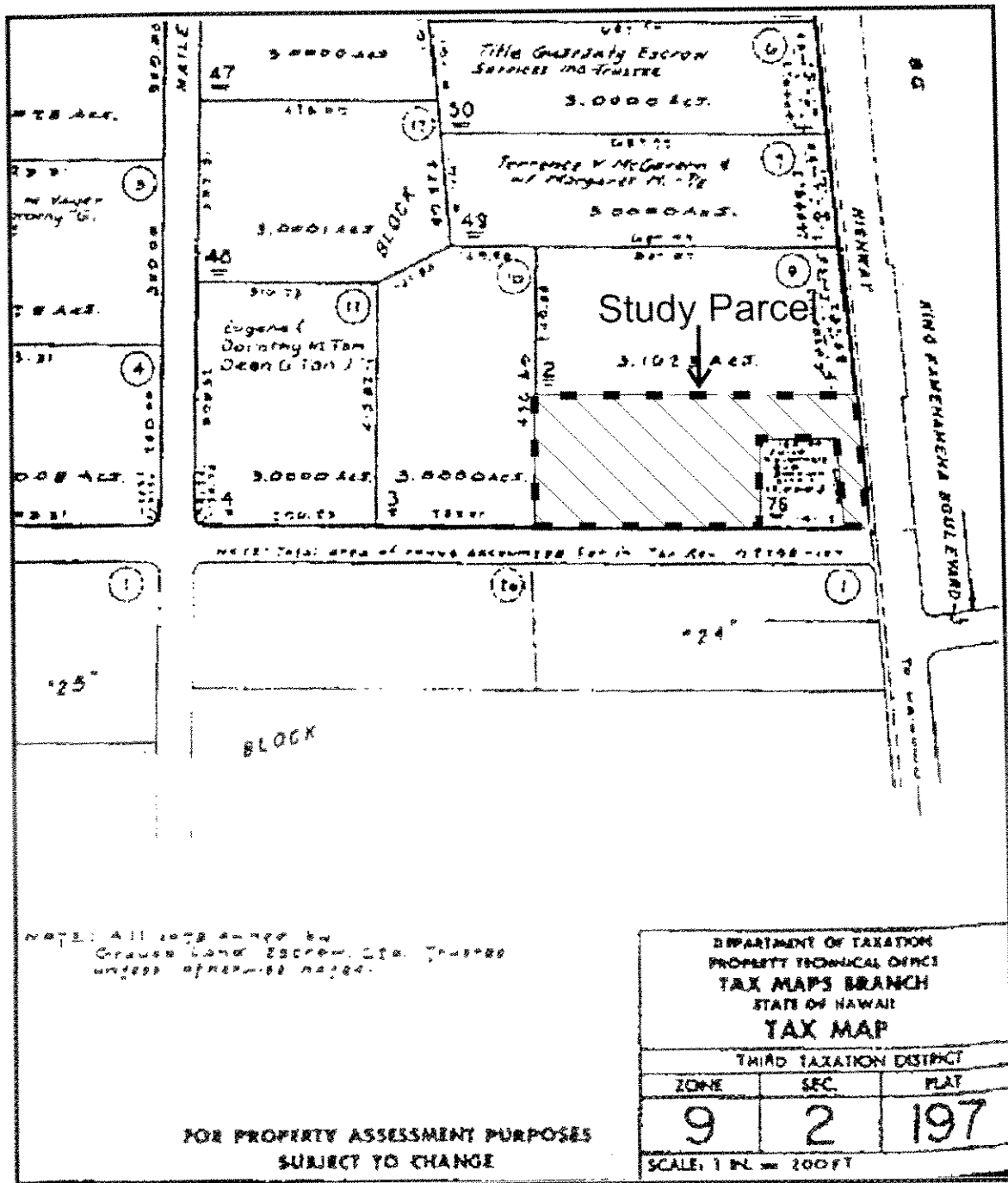


Figure 2. Portion of TMK:3-9-2-197 showing study parcel.

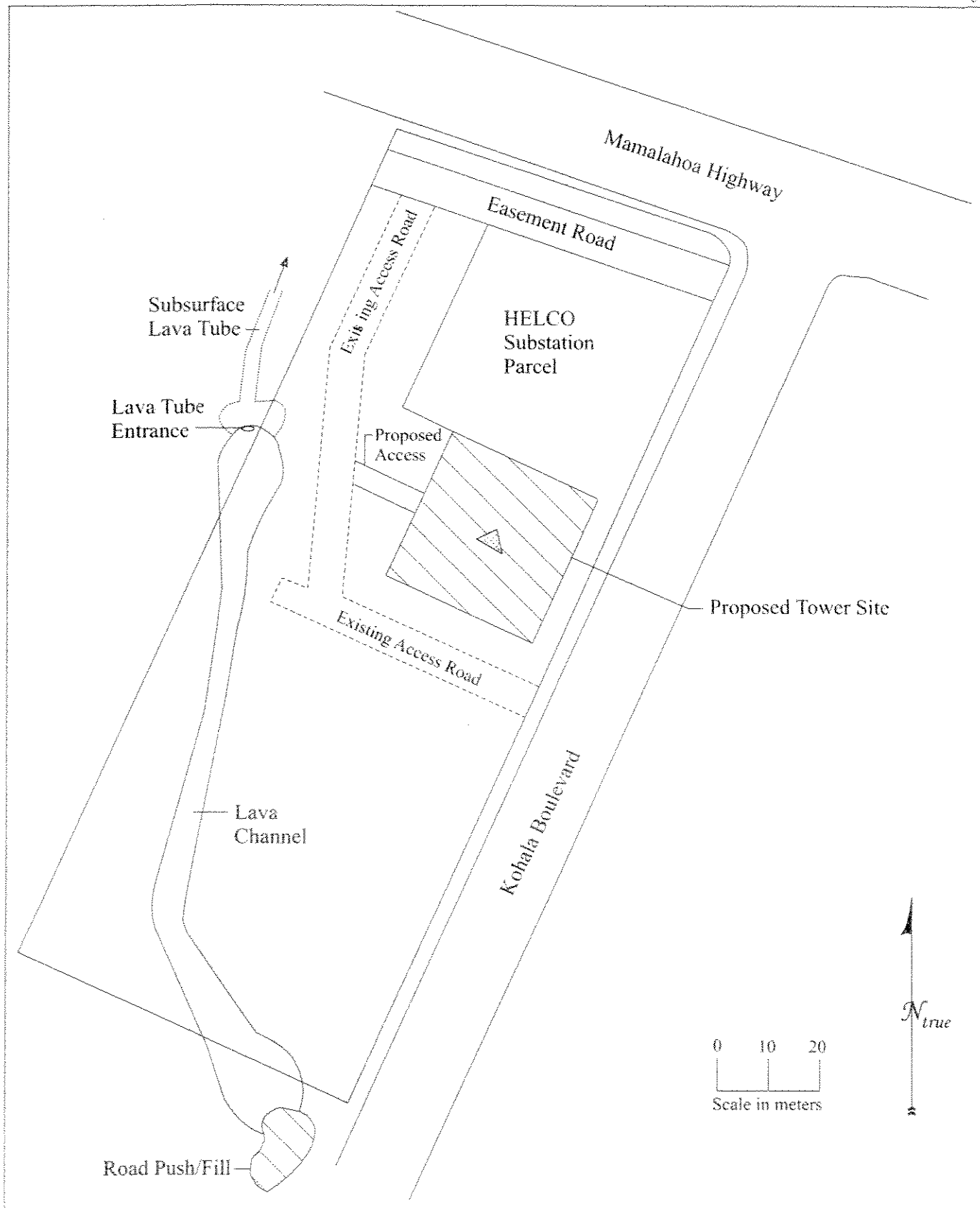


Figure 3. Proposed Tower location and lava channel.